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## GLUCOSE INTRAVENOUSLY AS A THERAPEUTIC MEASURE*


LAWRENCE LITCHFIELD, M.D. (PITTSBURGH)
Major, M. R. C., U. S. Army
CAMP LEE, PETERSBURG, VA.


In combating serious diseases, besides the specific effects of the invading micro-organisms, we have to deal with three very important conditions, dehydration, intoxication (from retention of waste products) and nitrogen starvation. The picture is a very complex one, and I shall not attempt to analyze and disentangle all the component signs and symptoms.

It seems to me that dehydration is the least appreciated and therefore the most potent for evil. Three fifths of the body weight is water. A man will succumb to the deprivation of water in a few days, while he can survive the deprivation of food for forty days or more. Water is needed to maintain the volume of the blood necessary for the mechanical efficiency of the circulatory apparatus, to carry nourishment to the cells, to carry away in solution the waste products of metabolism, and to maintain the proper solutions and osmotic conditions essential to normal cell life. Lusk[1] points out that without a sufficient supply of water the fasting organism cannot utilize its own protein and fat for the supply of energy necessary for existence. Water is also very important for certain biochemical reactions incident to metabolism. It is an essential factor in heat regulation by evaporation from the skin and lungs; approximately two thirds of a liter being thus utilized daily by a resting man.

When water is abstracted from the blood by natural processes and is not promptly replaced from without, it is taken from the tissues, thereby impairing the normal vital processes of the cells. In the same way, when food is not supplied from without, the body tissues are drawn on and broken down to supply both nitrogenous and nonnitrogenous needs.

The maintenance of a sufficient supply of water from natural sources is interfered with by nausea, conditions of the throat or esophagus which prevent or limit swallowing, conditions of the gastro-intestinal tract which prevent the retention and absorption of water, apathy, delirium and coma. An abnormal and often dangerous loss of water is occasioned by vomiting, diarrhea, profuse perspiration, acidosis, hemorrhage, and by sudden large inflammatory exudates from serous membranes.

We have recently found that in some of our streptococcus pleurisies the nitrogen loss also in these exudates should be reckoned with. The serous exudate contains 1 per cent. of nitrogen, or 10 gm. to the liter. The purulent exudate contains 1.2 per cent. of nitrogen. These figures have been carefully worked out at Camp Lee by Lieutenant Bell of the Streptococcus Commission. Sometimes more than 3 liters were aspirated at one time, and often repeated aspirations were made over periods of several weeks, the exudates still remaining serous. One patient had eleven aspirations in four weeks, although in that case the total amount of fluid drawn was only 1,750 c.c. Purulent cases sometimes discharge large amounts over long periods.

The best known picture of rapid dehydration is that of Asiatic cholera. The best results in the treatment of cholera have been by the free supply of water by intravenous injections. Almost equally striking is the picture sometimes presented in Shiga dysentery and in acute and severe acidosis. Joslin says that the latter patients should be given a liter of water every six hours. Children with dysentery, moribund from dehydration, may be saved by large injections of physiologic sodium chlorid solution into the peritoneal cavity.

This dehydration, with more or less cooperation of sepsis, intoxication and starvation, presents the following picture: Respiration becomes rapid. The pulse increases in rapidity, becomes small and thready, and finally disappears. The systolic pressure falls, sometimes to 60 or 70. The pulse amplitude is diminished. The tongue becomes dry and parched, the skin generally dry, the features pinched, the eyeballs sunken, the tension of the eyeballs markedly diminished. The surface of the body may be cold, and the extremities clammy and shriveled. The patient looks "toxic" and rapidly becomes weaker. Apathy develops, with disinclination to take water or food. There is oliguria, sometimes almost complete suppression, and constipation. Sometimes there is restlessness and irritability, followed by hallucinations, delirium and coma. The loss of weight may be very great.

This picture may occur in empyema, meningitis, typhoid fever, Shiga dysentery, peritonitis, brain abscess, pneumonia and other conditions.

The problem, then, is not merely to supply a sufficient amount of fluid for the daily needs but to make up the extreme deficiency of the past days before the damage shall have become irreparable, while at the same time, energy should be supplied, and the body nitrogen, which is being sacrificed rapidly, should be spared.

The supply of a suitable amount of hypertonic glucose solution intravenously has the following

* Chairman's address, read before the Section on Practice of Medicine at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Lusk, Graham: The Science of Nutrition, Ed. 3, Philadelphia, W. B. Saunders Company, 1917.

effect: The general appearance improves at once. The features are less pinched. The patient looks brighter and less "toxic." The respiration becomes slower. The pulse becomes slower and fuller. The blood pressure rises. The pulse amplitude is markedly and persistently increased. Erlanger noted much more effect from glucose than from control injections of salt solution. The tongue becomes moist. The patient asks for water and food. The kidneys and bowels become active. If the patient was restless or delirious, he becomes quiet and often goes to sleep while the injection is being given.

This procedure should be repeated, if indicated, at intervals of eight, twelve, eighteen or twenty-four hours, until, with the aid of the oral and rectal administration of water, the normal proportion of fluids has been restored and convalescence established.

Glucose is chosen because it is nontoxic, it is quickly utilized by the organism, it is the best sparer of nitrogen, it is a stimulant to the mechanism of cell metabolism, and it is easily obtained and easily prepared.

When glucose is injected into the blood stream, the first effect apparently is the absorption of water from the tissues, as shown by a fall of the hemoglobin percentage, indicating greater dilution than the water injected will account for. The secretion of the kidneys is temporarily diminished, owing to the need of water in the blood stream.

This taking of water from the tissues may be assumed to remove specific toxins and waste products with it in solution. The glucose is quickly taken up from the blood by the tissues, and this sets free the water either for elimination from the kidneys or for utilization in the body protoplasm. That the glucose is burned there is no doubt. There is an increased heat production which does not follow the intravenous introduction of water or of water with sodium chlorid or urea, as shown by Lusk.

Lusk believes that there is a definite stimulation of the cell mechanism by the food in the blood stream. This accords well with our clinical observation. Many physicians have remarked that the apparent effects of an injection of glucose are often strikingly out of proportion to the quantity of water and sugar used. An injection of 200 or 300 c.c. of a 25 per cent. solution is often followed by a return of thirst and appetite, the reestablishment of a normal flow of urine, a drop of temperature and a definite beginning of convalescence. This cannot be due solely to the water supplied.

The results of a single small injection are particularly striking in cases in which the injection has been followed by a marked reaction—chill, rise of temperature, sweating, etc.

Certain pneumonia patients at Camp Lee during the stage of convalescence, though taking sufficient food and fluid, failed to improve as expected. The tongue showed a tendency to be dry; the pulse was rapid; the extremities were cold and clammy; the appearance was muddy, slightly cyanotic and "toxic"; there was mental sluggishness, or apathy. In four such cases from one to three 25 per cent. intravenous injections initiated a prompt and uninterrupted improvement.

I feel that a reaction following the intravenous injection of glucose is an artefact to be avoided. In the work of Erlanger and Woodyatt,[2] and Wilder and Sansum[3] a large number of injections have been given without reaction. In my cases, reactions have occurred occasionally, but without serious results. It is interesting to note that the apparent effects of some of the reactions we have had strikingly resemble some of the results reported by Miller and others from the intravenous treatment of arthritis by foreign protein and other substances. For example:

A boy, aged 12, who had been desperately ill for several days with lobar pneumonia with a temperature of 105.3 F., after receiving 300 c.c. of glucose solution had a severe chill of ten minutes' duration and a rise to 108.4 F., followed by a drop of 98 F. in ten hours. Two days later his temperature had risen to 104.5 F., when he received 300 c.c. of glucose, which was followed by a chill with a rise to 107.5 F., dropping to normal in about six hours, followed by a moderate rise for twenty-four hours and an uneventful convalescence.

It is understood, of course, that it was his general condition, not his temperature, that indicated the use of glucose.

After the water is eliminated or absorbed, the blood pressure falls; but the pulse amplitude remains good because the heart muscle has been nourished and stimulated by the glucose.

The loss of fluid into the dehydrated tissues may be more important for the blood volume than the loss of fluid by the kidneys, and indicates an immediate repetition of the intravenous injection.

My experience with the intravenous use of glucose solutions began in 1909. For several years I used only an isotonic solution (51 gm. to the liter), using it in all cases in which I had previously resorted to salt solution by hypodermoclysis.

A series of desperately ill patients with late and neglected pneumonia, brought into the ward of the Pittsburgh Hospital, showed strikingly satisfactory results. I never saw any evidence of hemolysis.

In 1914 I began to use hypertonic solutions.[4] Since then I have resorted to the intravenous use of hypertonic solutions of glucose with greater and greater frequency and with greater and greater satisfaction.

Many of my surgical friends have become ardent converts to its use both before and after operations—in desperate risks, to prepare the patient for operation, and for varied postoperative conditions for which it offers particular advantages. In my service at Camp Lee during the past nine months, it has been used frequently and freely. Many medical officers have become enthusiastic advocates of this measure from their observation of its results in cases of pneumonia, meningitis, typhoid fever, septic peritonitis, empyema and brain abscess.

### TECHNIC

The splendid work of Woodyatt and his followers has demonstrated that a man can take care of 0.8 gm. per kilogram of body weight per hour without glycosuria. For clinical work, 250 c.c. of a 25 per cent. solution, which is the strength I ordinarily use, and of which the caloric value is conveniently counted as 1 calory per cubic centimeter, may be given in about one hour to the average adult patient. Spectroscopic analysis and the electric pump are not necessary outside the physiologic laboratory.

Any method for arsphenamin administration is satisfactory for glucose solutions.

2. Erlanger, Joseph, and Woodyatt, R. T.: Intravenous Glucose Injections in Shock, THE JOURNAL A. M. A., Oct. 27, 1917, p. 1410.

3. Wilder, R. M., and Sansum, W. D.: d-Glucose Tolerance in Health and Disease, Arch. Int. Med., February, 1917, p. 311.

4. Litchfield, Lawrence: The Abuse of Normal Salt Solution, THE JOURNAL A. M. A., July 25, 1914, p. 307.

Care should be taken in the water used, remembering that sterile water is not necessarily nontoxic. A pure supply, filtered and double distilled, is desirable. Any pure glucose may be used. The solution should be sterilized by autoclave or boiling.

The temperature of the solution should be maintained during the administration at about 100 F. This may be done conveniently by having the tube pass through a large basin of hot water placed beside the patient. The needle is held in position by a piece of adhesive plaster fixing the tube to the arm about an inch from the needle. Small needles are best.

A hypodermic injection of morphin may be given if necessary to control a delirious or hypersensitive patient.

The largest amount we have given at one time was 1,700 c.c., which flowed with an intermission of two hours, continuously for eleven hours, and was not followed by glycosuria.

When we know more about inorganic metabolism, we may rationally modify our solutions accordingly.

### EXCERPTS FROM CLINICAL RECORDS

CASE 1.—E., admitted because of lobar pneumonia, was irrational for five days after entering the ward, refused nourishment and became steadily weaker. Intravenous injection of 500 c.c. of 25 per cent. glucose solution resulted in immediate improvement.

CASE 2.—F., with lobar pneumonia, in a very toxic condition, with tongue dry, brown and coated, was delirious on admission. Intravenous injection of 500 c.c. of 25 per cent. glucose solution caused the patient immediately to become quiet, and improved.

CASE 3.—P., with streptococcus infection and purulent pericarditis, had undergone operation, and his condition was very low. Intravenous injection of 25 per cent. glucose solution, 1,000 c.c. given in two doses, effected marked improvement.

CASE 4.—C., with lobar pneumonia, Type I, had received 300 c.c. of antipneumococcic serum in three doses, with no improvement. Intravenous injection of glucose solution, 500 c.c., led to immediate improvement.

CASE 5.—S., who had Type I pneumonia, was in an unsatisfactory condition though he had received 900 c.c. of antipneumococcic serum. Intravenous injection of 1,500 c.c. of glucose solution caused him to improve markedly, but he developed streptococcus infection (as shown by blood culture) and died.

CASE 6.—N., with lobar pneumonia of very severe type, lost strength and refused nourishment. Intravenous injection of 500 c.c. of glucose solution resulted in immediate improvement.

CASE 7.—L., an alcoholic, with lobar pneumonia, had been delirious seven days and was thought to be dying. Intravenous injection of 250 c.c. of glucose solution was performed. Improvement began at once and recovery followed.

CASE 8.—F. was brought in delirious on the third day, Oct. 24, 1917, with epidemic meningitis. He developed pneumonia with phlebitis of the left leg, and had nine intraspinal and two intravenous injections of Flexner's serum. In the third week he was semicomatose, but intravenous injection of 210 c.c. of 25 per cent. glucose solution resulted in marked improvement from a condition typical of toxic dehydration. Next day 250 c.c. led to striking improvement; the mouth became moist, the patient took fluids, the kidneys became active, the mental condition steadily improved and slow convalescence followed.

CASE 9.—S., a pneumonia patient in a condition of marked dehydration, was given 1,250 c.c. of 25 per cent. glucose solution intravenously in three days. Convalescence was established.

CASE 10.—H. presented a septic type of temperature and dilated heart following pneumonia with dehydration. Intravenous injection of 1,220 c.c. of 25 per cent. glucose solution in three days led to recovery.

CASE 11.—S., with pneumonia of Type II, was very toxic, dehydrated, and his nervous system was much disturbed. Intravenous injection of 2,350 c.c. of 25 per cent. glucose solution in five days led to recovery.

CASE 12.—W., a pneumonia patient, was very toxic and dehydrated. Intravenous injection of 580 c.c. of 25 per cent. glucose solution in one dose was followed by immediate improvement, going on to recovery.

CASE 13.—B. (colored), with pneumonia, had a temperature of 105 F. and was in a very desperate condition. Intravenous injection of 400 c.c. of glucose solution was followed by chill and delirium; the temperature dropped 4 degrees in three hours. Four days later, 400 c.c. were again given, this time with no reaction. Recovery was very rapid.

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## A STUDY OF DIAPHRAGMATIC MOVEMENTS IN ACUTE ABDOMINAL INFLAMMATION *

LLEWELLYN SALE, M.D. (ST. LOUIS)
Major, M. R. C., U. S. Army
CAMP WADSWORTH, S. C.

Limitation of diaphragm movement in the presence of certain intra-abdominal lesions is well known. About twenty years ago Czerny[1] cited postoperative limitation, with its resulting pulmonary congestion, as one of the causes of postoperative pneumonia. The diagnostic importance of the position of the diaphragm and of its motility in differentiating between supraphrenic and subphrenic disease is often referred to in the literature.[2] The lesions to which this effect on the diaphragm is attributed are those that involve contiguous organs. Thus, Hubeny[3] cites gastric ulcer located at the esophageal opening. Hughes[4] says:

> The diaphragm, if its peritoneal surface be inflamed or irritated from any cause whatever, e. g., a perforating gastric ulcer, will be thrown out of action in the same way as the abdominal muscles. If only one half is affected, that half will not move so freely as normally, and it is probably on this account that the occasional difficulty in diagnosis arises between a lobar pneumonia and a perforated gastric ulcer.

My attention was first called to a unilateral inhibition of diaphragm movement and diminished lung ventilation in a man who had been operated on because of an acute appendicitis; a few hours after recovering from the effects of the anesthetic (ether) he developed a slight cough, but no elevation of temperature. At the request of the surgical service his lungs were examined. This examination was negative except for absence of breath sounds in the lower right axilla and the lower right back. He was seen a few hours later, and this absence of breath sounds was no longer noted. He made an uneventful, afebrile recovery. These auscultatory findings could not be explained on the basis of a pulmonary lesion. It was thought that the absence of breath sounds may have been due to a splinting of the right lung and that this splinting may have been a reflex protective mechanism to shield the area damaged by appendical inflammation and surgical trauma. It was argued that if this condition existed after operation, it might reasonably be looked for before operation, and it was determined to examine as many cases of acute abdominal disease as possible with this end in view. Through the kind-

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* Read before the Section on Practice of Medicine at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Czerny, quoted by Henle: Arch. klin. Chir., 1905, p. 130.
2. Hoover, C. F.: The Functions of the Diaphragm and their Diagnostic Significance, Arch. Int. Med., August, 1913, p. 214. Adams, J. E., and Cassidy, M. A.: Acute Abdominal Diseases, London, 1913.
3. Hubeny, M. J.: Am. Jour. Roentgenol., 1916, **3**, 364.
4. Hughes, E. C.: Guy's Hosp. Gaz., 1917, **31**, 294.

ness of the surgical service at base hospital, Camp Wadsworth, S. C., notice was given of all patients that on admission had abdominal pain. Stress of work made it impossible to see all these patients or to study any of them very carefully. Twenty-five patients in all were seen and examined, and the observations made form the basis for this report.

The diaphragm is one of the most important muscles of the body, ranking second only to the heart as a "vital organ." This is not the place to consider minutely its anatomy and physiology. A few cardinal facts should be kept in mind. The inspiratory enlargement of the thoracic cage takes place in three dimensions. The increase of the longitudinal diameter of the thorax is due solely to the descent of the diaphragm.[5] This has a direct bearing on our problem. Increase of the anteroposterior and transverse diameters (scaleni and intercostals) can be accomplished without influence on a diseased area in the abdomen, that is, without raising intra-abdominal pressure. The diaphragm is supplied by the right and left phrenic nerves, derived from the anterior primary divisions of the third, fourth and fifth cervical nerves. The nerve filaments that pass to the diaphragm from the lower four intercostal nerves are sensory in function and supply only the peritoneum. Inhibitory fibers have not been demonstrated in the phrenic nerve.[6] This is important to remember in an attempt to explain the phenomenon of unilateral inhibition of the diaphragm.

## SCOPE OF THE EXAMINATION

The examination of the twenty-five soldiers, which forms the basis of this report, was conducted as follows: Notice was received that a patient with suspected acute abdominal disease (in every case but one, appendicitis) had been admitted to one of the surgical wards. The patient was seen, and auscultation of the chest was first done. The abdomen was then examined and the findings noted. The soldier was then taken to the roengen-ray laboratory, and the screen examination was made with the subject in the horizontal position. Those patients that were to be operated on were not given a preliminary morphin injection. No attempt was made to influence the surgeons on the grounds of the auscultatory and screen examinations, as the validity of the conclusions arrived at had not been established. As the investigation progressed, however, I learned to lean more and more on the evidence furnished by the diaphragm sign. The auscultatory difference between the right and the left side was solely a quantitative one in the inspiratory murmur, its loudness, length and intensity. The inspiratory murmur was usually noted as "feebler" on one side than on the other. The roentgen-ray examination consisted of a comparison between the amplitude of the excursion of the right and left halves of the diaphragm.

The majority of cases examined were clearcut cases of acute appendicitis, catarrhal, gangrenous and perforative. The degree of fixation of the right diaphragm, estimated by the intensity of the breath sounds and by the screen, varied somewhat with the severity of the local condition. This relationship was by no means constant, nor could it be estimated quantitatively so that it might be used in foretelling the character of the inflammation that was to be found. The roentgen ray in every case substantiated the stethoscopic findings. The right diaphragm was as a rule flatter than the left. Its movement was limited when compared to the left, and there was less lighting up of the right than of the left costophrenic sinus. In sixteen cases in which the diagnosis of acute appendicitis had been made, the diaphragm sign was positive and at operation an acute inflammatory condition was found. In three cases the physical signs were questionable so that operation was delayed. In these cases the diaphragm sign was positive and later operation showed an acutely inflamed appendix. In three doubtful cases the diagnosis of appendicitis was made by some of the surgical assistants. In these cases the diaphragm sign was negative. These patients were not operated on and made uneventful recoveries. It is not certain that one or more of them did not have acute appendicitis that subsided without operation. In three cases that were unhesitatingly called acute appendicitis because of history and physical signs in which the diaphragm sign was negative, normal appendixes were found at operation.

It may be interesting to give a few details concerning some of these cases:

## REPORT OF CASES

Case 1.—Private P. G. W., Reg. No. 6189, was admitted with a history of headache and pain in the right lower quadrant radiating down to the scrotum, with nausea, but no vomiting. The usual abdominal signs were negative, so that this was not considered a case of acute appendicitis. My notes on the diaphragm stated that there was a distinct suppression of breath sounds on the right side in the axilla and back. Screen examination revealed some flattening of the right diaphragm. Diaphragm movement on the right was less than on the left, and the lighting up of the left costophrenic sinus was much more pronounced than the lighting up of the right. The patient was operated on twenty-four hours after admission, and the surgeon noted retrocecal appendix, erectile, acutely flexed, walls thickened, vessels injected, bulbous tip.

Case 2.—Private G. G., Reg. No. 6213, had a ruptured appendix with some free pus in the peritoneal cavity. The diaphragm sign was acutely positive, but in spite of the peritoneal involvement, the left diaphragm moved freely.

Case 3.—Sergeant H. K., operated on for acute appendicitis, April 12, 1918, had a rise of temperature, April 15, to 102. He was referred to the medical service for the purpose of determining whether or not there was a postoperative pneumonia. Roentgenoscopy revealed a most startling difference between the movements of the two halves of the diaphragm. The excursions on the left side were fairly adequate; the left costophrenic sinus lighted up well. The right diaphragm was practically fixed. Most careful scrutiny revealed a minimal excursion in the central portion of the right half of the diaphragm. Necropsy disclosed a suppurative peritonitis limited to the right side of the abdomen.

Case 4.—Private C. R. W., Reg. No. 6675, began to be ill with sharp, cramping pains in the lower right abdomen. A few hours later there were nausea and vomiting. The findings of the ward surgeon were tenderness, pain and rigidity over the entire abdomen, especially marked over McBurney's point, and he diagnosed acute appendicitis. The temperature was 98, the leukocyte count, 15,800. The diagnosis of the ward surgeon was concurred in by the assistant chief of the surgical service, and immediate operation was advised. No difference was to be made out in the intensity of the breath sounds over the right and the left lungs; the diaphragm sign was negative. At operation a normal appendix was found.

Case 5.—First Lieutenant M. H. D., Reg. No. 6396, admitted to hospital with an acute tonsillitis, April 10, 1918, developed pain in the abdomen, April 13, and was nauseated. The chief of the surgical service, April 12, noted that the patient was "nervous" and complained of pain in the abdomen which was

5. Hoover, C. F.: Diagnostic Signs from the Scaleni, Intercostal Muscles and the Diaphragm in Lung Ventilation, Arch. Int. Med., November, 1917, p. 701.

6. Erlanger, Joseph: Personal communication to the author.

relieved by pressure. There was some tenderness in the right iliac fossa. There may have been an acute appendicitis, but he was not certain. From examination of the chest it was noted that the breath sounds over the right lower back were not as distinct as those over the left back, and this difference was noted in the axillae. The patient's temperature from the time of the onset of the abdominal pain was never above 98, and his pulse at no time more than 84. The leukocyte count was 20,600. Operation disclosed an acute gangrenous appendicitis.

CASE 6.—Private G. B. T., Reg. No. 7639, had pain in the right lower abdominal quadrant, with nausea and vomiting. The assistant chief of the surgical service decided on operation because of an acute appendicitis. Auscultation of the lungs revealed inspiration over the right base and in the right axilla louder than in the left side. Roentgenoscopy disclosed no lagging of the right diaphragm; in fact, there was more movement there than in the left side. The diaphragm sign was negative. At operation a normal appendix was found.

CASE 7.—Private I. H., Reg. No. 7666, presented an instructive case. The clinical diagnosis was acute appendicitis. Auscultation revealed very feeble breath sounds over the lower part of both lungs. The screen showed two halves of the diaphragm at exactly the same level. Movement on both sides was limited and jerky in character, not at all like the normal undulation. The findings could not be interpreted, but it was surmised that hyperacute appendicitis with peritoneal involvement might give this picture. The operative findings were acute, ulcerative appendicitis with beginning peritonitis.

CASE 8.—Private W. N. had hyperacute, ulcerative appendicitis. Inspiration on the right side was feebler than on the left. Roentgenoscopy revealed the diaphragms at about the same level. Movement on the left side was limited and on the right side absent except for very slight descent of the central portion.

CASE 9.—Private P. D., Reg. No. 6302, had pain in the right hypochondrium, with rigidity of the right upper rectus and tenderness over the region of the gallbladder. He was kept under observation for some time. There was fever of the septic type. A diagnosis of suppurative cholecystitis was made by the chief of the surgical service and concurred in by five or six consultants. There was no diminished breathing over the right lung such as one would expect to find in an acute cholecystitis. Roentgenoscopy revealed no pulmonary lesion. The right and left diaphragm moved equally and well. The excursions were ample and normal. At operation a normal gallbladder was found.

### DIAPHRAGM MOVEMENTS IN NORMAL SUBJECTS

Screen examinations of the diaphragm movements in soldiers who had known no thoracic or abdominal diseases were made for comparison. These were all made with the soldiers in the horizontal position. It was observed that when any difference could be made out, the right diaphragm moved somewhat more than the left. In most cases, however, the amplitude of the excursions, as far as they could be accurately measured, appeared to be equal on the two sides.

### LIMITATION OF MOVEMENT IN ACUTE ABDOMINAL DISEASES

In a small number of cases it has been shown that there is a limitation of movement of the diaphragm in acute abdominal diseases. It has been demonstrated that this limitation of movement is confined to the side that corresponds to the site of the lesion, or at any rate is much more pronounced on that side. We have shown that this limitation of movement occurs not only in cases in which there is an involvement of the peritoneal surface of the diaphragm but also in cases in which the lesion is remote. No definite explanation of this process can be offered. If the phrenic nerve has no inhibitory fibers it cannot be due to the transmission of reflex inhibitory impulses down this nerve. It may be due to an inhibition of the motor phrenic center in the cord. The diaphragm may be immobilized simply in a mechanical fashion through rigidity of the abdominal wall. Voluntary inhibition may explain some of these cases. Professor Erlanger[6] of Washington University, St. Louis, has said that it is conceivable that a person might be able to inhibit voluntarily one half of the diaphragm.

It is believed that the study of the diaphragmatic movement with the stethoscope, with the fluoroscopic screen and perhaps with other methods may be of some assistance in arriving at a conclusion in cases in which the diagnosis of an acute abdominal lesion is suspected but not established. It seems very desirable that clinicians should study these cases from this point of view. It is only by careful observation of many cases that the practical usefulness of the diaphragm sign can be established.

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## ABSTRACT OF DISCUSSION

DR. J. BIRNEY GUTHRIE, New Orleans: The new application of Williams' diaphragm sign is exceedingly interesting. We have observed the limitation of motion of the diaphragm in all thoracic diseases. We regard it as a diaphragmatic reflex, a diagnostic measure of great importance in the examination of the chest. There are two other methods of observing the motion of the diaphragm. One is the familiar Litten's phenomenon, which disappears in the course of certain thoracic diseases, and the other consists in the percussion of the line of the diaphragm during quiet and after forced inspiration, and measuring the distance between the lower lung borders during the two phases.

It does not seem mysterious why the diaphragm remains fixed. The occurrence of a spastic reflex seems an adequate explanation. We see a similar phenomenon around a joint in disease. The limb is fixed by a spastic reflex action on the part of the muscles that control that joint. The joint is held in fixation until irritation has subsided. A wasting of the muscles above and below the diseased joint always occurs as a result of this spastic innervation of the muscles. Pottenger has studied the wasting of overlying muscles in thoracic disease, especially in pulmonary tuberculosis. He attributes considerable prognostic value to the degree of that wasting. It is possible that atrophy of the diaphragm exists. It will be exceedingly interesting to study this reflex in an abdominal disease, where heretofore we have been considering it in its relation to thoracic disease only.

DR. F. M. POTTENGER, Monrovia, Calif.: Dr. Sale has pointed out an exceedingly interesting phenomenon. It belongs to the group of viscerogenic reflexes. I do not believe that we can explain this reflex through the phrenic nerve. It must be through the lower intercostals. The phrenics take their origin from the third and fourth cervical segments of the cord, and are in reflex communication with afferent impulses which come from the lung. The abdominal viscera, however, are supplied by the sympathetic nerves, which take their origin from the lower six thoracic segments of the cord. Afferent sensory impulses, traveling centralward from the abdominal viscera, transmit their impulses to the six lower intercostal nerves which supply the intercostal muscles, the costal portion of the diaphragm and the abdominal muscles. An inflammation in the lung forms reflexes with the motor and sensory neurons arising in the cervical portion of the cord, particularly the third and fourth segments. The motor reflex shows in the accessory muscles of respiration, particularly the sternocleidomastoideus, scaleni, trapezius, levator anguli scapulae, rhomboidei and diaphragm. Whenever inflammation exists in the lung, some portion of these muscles shows increased tension, which, in the diaphragm, shows as a lessened respiratory movement on the side of involvement. Reflexes arising from the abdominal viscera would be

accounted for more readily as taking place through the lower six intercostals, the reflex being in the costal portion of the diaphragm rather than in the central tendon, which is supplied by the phrenics.

The observation of these visceral reflexes is of great clinical value. They aid in the study of the manner in which disease processes express themselves in internal viscera. Every important organ of the body stands in definite relationship through the sympathetic nerves which supply it, with certain spinal motor and sensory neurons, which, when irritated, cause contraction of skeletal muscles and referred pain in certain skin areas. I would call attention to the fact, however, that the same limited motion mentioned by Dr. Sale when abdominal viscera are inflamed is found when thoracic viscera are inflamed. Therefore, it would be wise for those who are observing surgical cases of the abdomen to bear in mind that such a reflex may be produced by diseases above the diaphragm; and, likewise, it would be well for those who deal with thoracic diseases to remember that a reflex limited motion of the diaphragm may also be caused by diseases in the abdomen. I do not know of any one having described this reflex before, although the physiologic basis for its existence is definite.

Dr. Walter E. Scott, Adel, Iowa: This subject has been investigated entirely from the thorax, because of the fact that the vesicular respiratory murmur is not necessarily due to the ingress and egress of air. This was shown by a case Dr. Hoover reported some years ago, in which there was severe hiccup for several days before death. The air did not enter the lungs on account of the spasm of the glottis, but the vesicular respiratory sound was present, nevertheless. I have tried to show that the vesicular respiratory murmur is due to another cause; it is closely related to the muscles. The lessened activity of the muscles on the side affected, including the diaphragm, gives a diminished muscle sound and, therefore, a diminished vesicular sound. The diminished muscular activity is due to the inflammatory condition, and because of the diminished respiratory murmur on the side affected it has always been considered from the chest standpoint, as the diminished breath sounds appeared to point to trouble in the chest. I investigated the origin of the vesicular respiratory sound very thoroughly quite a while ago, but have not yet reported my findings, except occasionally in discussions.

Dr. John A. MacDonald, Indianapolis: I have been greatly interested in Major Sale's observations on the diaphragmatic sign in acute abdominal inflammation. The most important paper in the history of this study has been lost sight of. Ten or twelve years ago, in a carefully reported study of the pleuritic reflexes, a clinician, whose name has escaped me, came to the conclusion that the diaphragmatic reflex arises from a zone approximately 2 inches wide adjacent to the lateral thoracic pleura. The reflex travel by the route of the phrenic and perhaps the pneumogastric to the bulb and are referred to the scalenes and more particularly to the upper border of the trapezius muscle, leaving a spot at the upper border of the muscle which is intensely sensitive at that time. The outer zone is reached by the route of the lower intercostals, the lower intercostals referring the pain downward. At that time we were in confusion about the pain as existing in appendicitis and in basilar pleurisy. In the last ten years I have seen ten patients who were operated on for appendicitis and a normal appendix was found. In these cases the tenderness picture was characteristic. They proved to be cases of pleurisy. In each one of the adults, who were in a mental condition to respond to questioning instantly, the trapezius sign was typical, so that in going to the upper border of the trapezius tenderness was invariable.

One of my patients still had a temperature elevation three weeks after a diagnosis of appendicitis. The roentgenogram appeared to be normal, although there was limitation of movement and slight arching of the right diaphragm. Being suspicious of a subdiaphragmatic empyema, I introduced a needle and operated successfully with the needle in situ. This sign requires greater study and more careful consideration, but I am grateful for it in the differentiation of appendicitis and lung conditions.

Dr. Llewellyn Sale, St. Louis: I was glad to hear these explanations for the diaphragm sign, because that was what I have been looking for. Major Guthrie's explanation does not explain. To say it is a spasm does not explain much to me. A statement like that needs a little explanatory comment as to the nature of the reflex, its course, etc. Dr. Pottenger's explanation did throw a little light on the subject. I submitted the whole matter to Professor Erlanger of Washington University, and he seemed to be of the opinion, and it coincided with what I had thought, that the sign was due largely to that same inhibition of muscular movement in the abdominal wall that one finds in acute abdominal inflammations; that the whole process was a teleological one, that it is not so much to lessen trauma, but rather to keep down pain. While that does not explain, it explains a little more than the term "reflex spasm," which Major Guthrie offers.

The point that was mentioned by Dr. MacDonald was a very enlightening one; in those rare situations in which we have to differentiate between an acute abdominal lesion and an acute diaphragmatic pleurisy the sign would not, it seems to me, be very helpful. Things that have caused me trouble are the chronic thoracic lesions and their possible confusion with intra-abdominal conditions.

An example is chronic pleurisy, tuberculous in character, which simulates gastric or duodenal ulcer until the patient finally fills up with fluid, and we know then what we are dealing with. Dr. MacDonald's discussion makes me realize that acute conditions might arise in which this sign would not be very helpful in interpretation.

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# THE RESPONSIBILITY OF INDUSTRIAL BOARDS TO EMPLOYER AND EMPLOYEE

## AS INFLUENCED BY THE OPINION OF THE MEDICAL EXAMINER *

CHARLES S. ANDRUS
Chairman, Illinois Industrial Commission
CHICAGO

It is estimated by competent authorities that in the United States annually more than 1,000,000 men are killed or injured in industrial accidents. In practically all fatal cases dependents are left, and in practically all nonfatal cases the injured employee is dependent on his wages for the support of himself and family. Adequate provision for the injured employee and his dependents is worthy of the best study and thought. I can briefly present only a few facts within the limits of this paper, asking you to consider them, not only as they affect your professional work, but also as good citizens interested in the welfare of your fellow men.

If the medical fraternity were as conservative and as jealous of precedent as the legal fraternity, to which I belong, they might still be arguing that antitoxin is not necessary in the treatment of diphtheria; that surgery is not necessary in the treatment of appendicitis; that trauma never produced a hernia, and that there couldn't be anything the matter with a man because there was no evidence of an organic lesion. I am thankful to state, however, that physicians are not bound by precedents, and to this untrammeled freedom of thought may be ascribed the wonderful advance that has been made and is still being made in the science of medicine.

* Read before the joint meeting of the Section on Preventive Medicine and Public Health and the Section on Orthopedic Surgery at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

It is still difficult for lawyers to break away from old precedents. I am sorry to confess that the adoption of the compensation principle for accidental injuries, instead of the archaic and decidedly unsatisfactory common law personal injury suit, was not primarily the work of the lawyers. Be it said to their credit, however, that there was no concerted opposition to this measure from them, although they knew that it would decrease litigation along personal injury lines.

### THREE METHODS OF ADMINISTRATION OF COMPENSATION ACTS

Workmen's compensation acts are now in force in thirty-seven of the forty-eight states of the Union. The earliest act dates only from 1911, so it may be seen that the spread of the compensation principle has been rapid. These acts are administered in different ways in different states. Twenty-three states have industrial boards or commissions; four states each have a single commissioner; and in ten states the act is administered by the courts. Five states have a monopolistic state-managed insurance fund from which the compensation is paid, and nine states have privately managed insurance companies in competition with the state-managed insurance fund.

We thus have three widely different methods of administration, and this should be borne distinctly in mind in considering the status of the medical adviser. In one class we have the act administered by the courts, in another class, claims paid directly from the state fund, and only on approval of the industrial commission, and in a third class, disputed claims only litigated or determined by the commission.

In these states in which the compensation act is administered by the courts, medical questions are determined generally as in other cases, by testimony, expert and otherwise. In at least one state, however, the court has the power to appoint an impartial medical referee to advise him. The method of determining the extent of physical disability by expert testimony has not proved a success. I do not consider that the physicians themselves are entirely to blame for the failure, for the fault lies in the system itself. The physician, who is the expert witness, is not allowed to volunteer his opinion. He is merely asked to answer the questions that are propounded to him by the attorney. The attorney is a partisan and is developing only his side of the case. If the expert witness has any information or opinion that would not help the side of the case on which he is called as a witness, he is not allowed to tell or express it. If, on cross-examination, this is elicited from the witness, it has the appearance of being something concealed by him and places him in an unfavorable light. Usually, however, the witness feels that he is being attacked by the cross-examining attorney and that it is a personal fight between them. Frequently also, one physician testifies to objective symptoms, and another to subjective symptoms, and to the layman this gives their testimony the appearance of being in conflict, while in reality no such conflict exists. How a layman is to decide a disputed question of extent of disability, when an equal number of apparently equally honest and intelligent physicians testify exactly opposite to one another, is a problem the correct solution of which would be of great assistance to tribunals who are compelled to solve it.

### PHYSICIAN'S PART IN ADMINISTRATION

The physician's part in the administration of workmen's compensation acts is a large one. The extent of disability caused by accident is in dispute more than any other point, in fact more than all other points combined. The tribunal passing on this question must of necessity rely very largely on the opinion of a physician in determining this question. So also frequently in death cases the question in dispute is whether the accident caused the death, and in this matter the physician must be appealed to in deciding the question.

It is not a question in administration of dispensing with physicians, because this cannot be done, and no one wishes it to be done, but the administrative problem is how to secure this opinion in the best possible manner. In states that have a monopolistic state fund from which compensation payments are made, the problem is much simplified, although the work rendered by the physicians of the commission is much more extensive. In Ohio, which has this system, more than 7,000 examinations are made annually. The physician's bill, as well as the injured employee's compensation, is paid from the state fund. There is thus every inducement for the physician to assist the commission in its work, and to disclose fully the medical facts in each case. In very few cases is the medical man compelled to testify. A claim is made by the injured employee, substantiated by the statement of a physician, and the compensation is paid directly from the state fund.

It is, however, in states that do not have this system that the principal difficulty arises. In a large number of states, as in Illinois, there is no state fund, and compensation is paid directly, either by the employer or the insurance company. Duplicate receipts of payments made are sent to the industrial commission and a check and record is kept of compensation payments in this manner.

It is, however, only in disputed cases that the commission is called on to decide whether compensation shall be paid and in what amount. In Illinois, in 1917, there were 3,238 such contested cases. July 1, 1917, the compensation act was made compulsory as to all hazardous occupations, and if the same ratio of increase continues during the remaining months of the year as has occurred thus far, there will be 5,166 such disputed claims filed in Illinois during the year 1918.

### PHYSICIAN'S SERVICES TO INDUSTRIAL COMMISSION

More than half these claims involve the question of the extent of the disability. The law in this state allows the industrial commission on its own motion to have the injured employee examined by a physician of its own choice. The Illinois commission has established a medical department of which Major P. B. Magnuson is the director. He spends each afternoon at the commission's office and another physician spends the forenoon. We thus have a physician on whom we may call at any time for examinations or advice. Major Magnuson has been in Washington for some time assisting the Surgeon-General in war work, and his place has been ably taken by Dr. W. E. Shackleton.

In disputed cases in which the medical testimony is in conflict, we have the employee examined by our

physician and consider his report in deciding the case. This is of inestimable value to us. We know that our physician is unprejudiced, that he was not brought into the case by either side and that he will give us a fair and impartial opinion. And naturally this opinion is considered of great weight by us.

Not only in disputed cases is a medical department desirable, but also in the case of lump sums and settlements, which are usually agreed matters. The employer or insurance company agrees to settle a case with an employee for a certain amount, and the employee is willing to accept this. The employee in such cases usually has neither a physician nor a lawyer. Our law provides that these settlements cannot be made without the approval of the industrial commission. In such cases especially does the commission need the advice of an impartial physician to examine the employee and to advise the commission whether in his opinion the settlement should be approved. In Illinois in 1917 there were 2,485 cases of this kind. In 1918, with the same ratio of increase that has occurred during the preceding months of the year, there will be 3,192 such cases.

Not only in the examination of injured employees is the medical director valuable to the industrial commission, but also in the analysis of medical testimony, the explanation of which is not easily understood by a layman, and in numerous other ways including the giving of advice on medical matters. In many cases it is desirable that the injured employee should be examined by a specialist. It may be an eye specialist, a specialist on nervous and mental diseases, or a specialist in laboratory or radiographic work. It is the province of the medical director to select these experts —something that could not be satisfactorily done by a layman, especially in a city the size of Chicago.

### SERVICES TO EMPLOYER AND EMPLOYEE

It is to the interest of both employer and employee that proper medical services be furnished the injured employee. The medical director can do much to assist in encouraging employers to procure the proper kind of medical treatment. They may be shown that there is nothing more costly than cheap medical work. The experience of one large firm in Chicago with their medical department illustrates this. This company was paying the head of their medical department $75 a month and imagined they were saving money. They concluded to change their system and put a trained surgeon in charge. The first year the medical expenses increased 800 per cent. In the preceding year this company had had thirty-one lawsuits. In the first year of the new system they had one suit and the claim department saved $30,000.

This was accomplished in several ways. Regardless of expense, the men were given the proper kind of medical treatment and they were able to return to work sooner. The medical director told the men the exact truth about their condition, and he did not act as a sounding board for the claim agent. The consequence was that the men had confidence in him, and the ambulance chaser did not succeed in stirring up trouble. They were ready to make a settlement on what the physician told them, as they knew he was telling them the truth. Taking into consideration, aside from the actual money saved, the increased good feeling between the employer and employee, which is so necessary in modern industrial times, it may readily be seen that cheap medical treatment does not pay. The medical director may do much to show this to the employer and to the insurance companies that have not yet found it out. Fortunately most of them have.

The medical director can do much along this line in advising employers as to the attitude of the physicians they employ. The physician who has the mental attitude that every injured man is either a malingerer or is greatly exaggerating his injury has no place in industrial surgery. If a man is a malingerer, the physician will find it out sooner by pretending not to consider him such, and if the medical man is mistaken in this respect, he frequently causes the patient to put himself in the mental attitude of wanting to be as sick as he can to spite the physician and show him up. The other extreme is nearly as bad, and the physician who tells the man that he has a broken spine when he hasn't and that he will never be able to work any more is frequently the cause of many industrial cripples.

### THE PHYSICIAN'S WORK IN REHABILITATION

The medical director may do much to assist the commission along the line of rehabilitation and retraining of injured men. It frequently happens that a laboring man has an arm amputated, for example, and honestly considers that there is nothing further that he can do, and that his usefulness is forever gone. The state has not done its duty to this man by merely paying him his compensation, which is soon gone. He should be trained for other work. The treatment is mental as well as physical and should be a part of the work of the medical department.

For this purpose the medical director should study the man, taking into consideration his age, mentality and education, his likes and dislikes, and the condition of the labor market. He should be definitely trained for some other line of work in which he may be made a 100 per cent. man. I lay emphasis on this 100 per cent. man, as that is the aim of the rehabilitation and the results accomplished. In a number of cases, men have lost an arm and have been trained for some other work, and have made more money than they have ever been able to make with two arms. The United States government, having the advantage of the experience of Canada and the European countries in the war, is outlining an elaborate plan for the rehabilitation of injured soldiers. All this work, of course, must not stop with the care of injured soldiers, but the facilities thus used and the experience thus gained must be used for the training of injured workmen.

No one class of persons in the present war have distinguished themselves more than the physicians. The critics all agree that no matter what defects may exist in other branches of the service, the medical staff has been 100 per cent. efficient. Never before in any war have medical men been exposed to so much actual danger and been so much under fire. Those of us who are particularly interested in injured workmen confidently expect that after the war the great knowledge and experience attained by the medical profession will be used for the benefit of men injured in industry. For as peace has its victories no less than war, so peace, no less than war, has its injured men, who are in fact much more numerous in the aggregate than war's wounded soldiers. And we know that in striving for better conditions for these injured men, we shall have the hearty and enthusiastic support of the medical profession.

## ABSTRACT OF DISCUSSION

DR. WILLIAM KRUSEN, Philadelphia: I have been, so far, without any personal experience in medical expert testimony. I think that many doctors are deterred from this by a certain amount of fear of the members of the legal profession. It was Gladstone, I believe, who said, "The perpetuation of these two professions is assured; because law rests on dissention, while medicine rests on disease." The one point that I think we should emphasize is the necessity for immediate impartial medical expert testimony. The medical man never presents such an undignified and unedifying spectacle as when he is being examined as a party in a damage suit case. He loses his dignity and his prestige when he attempts to maintain both. The division of his fee, it being paid by both plaintiff and defendant, makes it possible for him to give his testimony without offense to his conscience or to any one, with dignity and truthfulness, which is usually the aim of the medical man. Some of you may have read the book of Münsterburg called, "Psychology on the Witness Stand," in which he shows the difficulty which a man who is retained by either side has in trying to give testimony as unbiased as if he were retained by neither side. Let us put ourselves on record as being in favor of an expert medical board, not retained by either plaintiff or defendant.

MR. CHARLES S. ANDRUS, Chicago: I wish it understood that I do not criticize the medical profession as a class because of what I consider the evils of expert testimony. I understand that a lawyer will not bring in an expert witness to testify unless he knows that that witness will substantiate his theory of the case. No fault can be found with the lawyer for so doing. In fact, if he did not do this he would be guilty of malpractice.

Our medical department is entirely divorced from politics. Governor Lowden's ideas are being carried out in this respect. I do not know today the political faith of the two doctors who are at present doing our work.

We had a recent case in which an applicant for compensation was sent to Chicago for examination. Our doctors reported that he had traumatic neurosis and that, while he is now totally disabled, they believed that a few weeks' treatment would place him on the road to recovery. Through the cooperation of the employer we are having this man brought to Chicago for treatment and hope and expect to be able to restore him to industry. The assistance of a medical department in such cases is of great value. In fact, the work could not be successfully done without it.

We feel very strongly about the reconstruction of injured workmen. I hope that you will use all the influence that you can bring to bear in urging that whatever is done for the retraining of injured soldiers will be done for the retraining of men injured in industry. It is very probable in this war that we shall have no greater casualties than occur at the same time in industry, but we are so accustomed to industrial accidents that they do not make the impression on us that war casualties do. I hope that all of you will do everything in your power to see that the facilities provided for the reconstruction of injured soldiers shall be available for the reconstruction of injured workmen.

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**Abortive Treatment of Acute Articular Rheumatism.**—According to an abstract in the *Correspondenz-Blatt*, A. Edelmann reported in the *Münchener medizinische Wochenschrift*, 1917, No. 51, that he has been successful in aborting acute febrile articular rheumatism by enhancing the action of the salicylates by inducing, as a preliminary, hyperemia in the affected joints. The means with which he induced this focal hyperemia was by parenteral injection of milk. Müller and others have called attention to the hyperemia with transudation which is induced at points of lessened resistance by heterovaccine therapy and by parenteral injection of milk. Edelmann found that then when the salicylates were administered they were attracted likewise to these points, and their action was thus materially enhanced and the acute rheumatism aborted. In a group of forty-six cases, a heart defect developed only in two, and pericarditis did not develop once in a group of seventy cases.

# SYSTEMIC MANIFESTATIONS OF CHRONIC NASAL SINUS INFECTION IN CHILDHOOD *

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The part that acute and chronic respiratory infection plays in the immediate health and welfare of the infant and the child has been generally appreciated in the medical profession. Clinical experience has taught that the tonsils and adenoids are to be regarded as the primary loci of infecting micro-organisms, and there have grown up terms such as the tonsillar or rheumatic syndrome, and the like. It has been understood that from these primary loci infection travels either by continuity or by invasion into the body itself, and that other more distant affections are now regarded, if not directly caused by these primary troubles, as at least standing in close etiologic connection with them. However, a certain note of dissatisfaction is unmistakable, especially as evidenced in the discussion held in this section two years ago as to the possibility of overemphasizing the importance of these locations. This dissatisfaction is based in part on the fact that removal of the tonsils and adenoids did not yield the expected cure in a certain number of cases. The question is then opened as to other possible nests of infection in the nasopharyngeal or oral tracts, and while the teeth come into consideration as one of the favorite sites whereby germs may enter the body, it would seem that in early childhood at least this region plays a minor rôle in such invasions. So the problem would seem to have remained unsolved.

### DISCOVERY OF NASAL SINUS AS SOURCE OF INFECTION

In the course of clinical investigations made in a case of chronic deforming arthritis, which is either a subacute stage or a subacute type of the disease to which Still's name is given, it was observed that removal of the tonsils and adenoids and treatment of the teeth did not control the progress of the disease. My conviction was that with the irregular, even if slight, temperature and with the persisting tenderness of the joints, infection must still be present. As all other possible avenues of entrance of the etiologic agent or toxin into the body, except the nose, seemed to have been eliminated, the possibility that the nasal tract itself might be at fault was considered. Bearing in mind the commonness of infection of the accessory sinuses in adults, the head of the department of nose and throat diseases directed investigations toward that end at my suggestion.

The first two investigations, including intranasal puncture of the antrums following roentgen-ray examination, yielded only negative reports, in spite of which further investigations were urged. These resulted in a more radical opening of the antromeatal wall and the finding of streptococci, whose exact type, however, was not determined, in the curettings of spongy granulation tissue present in the antrums. Vigorous treatment of this assumed focus of infection was followed with a gradual but distinct subsidence of the clinical manifestations, after which, with

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* Read before the Section on Diseases of Children at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

appropriate orthopedic treatment, the child was restored to a condition as near normal as might be expected. The progress of the distressing disease was absolutely arrested and there remained only certain residual deformities which were still present at the last examination, eighteen months after the patient was first seen, while the pain on movement, a prominent feature in the early stages of the disease, was entirely absent.

### INADEQUATE ATTENTION PAID TO THE DISEASE

Examination of the medical literature reveals but little regarding the accessory sinus disease in childhood. Barthez and Rilliet[1] state that they will not treat of the simple snuffles so benign that parents do not need to bring their children to the hospital. Kohts[2] makes the first adequate mention of the subject, referring to the periostitis and the relationship of tooth infection, and to certain of such curious things as the finding of parasites in the frontal sinus. Onodi,[3] besides his work on the anatomy of the sinuses of infants, has collected fifty-three cases of acute sinus infection, some of marked severity, from the literature. In his article, instances of eight cases in the new-born were given. Hubbard[4] has shown the connection between the intense nasal discharge of scarlet fever and nasal sinus infection. A similar involvement has shown this connection in diphtheria. A report by Skillern[5] and other isolated reports have discussed this subject with further reference to acute disease. Oppenheimer[6] believes the disease is as common in children as in adults. Phelps[7] believes that, with careful study of certain infections, chronic sinus involvement might often be found. Other articles emphasizing the specialist's point of view have also appeared. From the small number of articles and the fact that the subject finds little or no mention in the modern pediatric textbooks, it would seem fair to believe that the chronic condition is either very uncommon or that its existence is not frequently appreciated.

### RESULTS OF CLINICAL EXAMINATIONS

With our attention, then, called to accessory nasal sinus infection as a possible etiologic factor in disease, routine observations were made by means of the roentgen ray, by puncture, nasal endoscope, and later by actual exploration, because of the fact that the roentgen ray often revealed no diseased area where the latter tests were positive; for it is well known that in certain instances, even when a considerable amount of pus is present, the roentgen examination may be negative. It was found that a surprisingly large number of young individuals had demonstrable pathology in these regions.[8] Simultaneously, those patients admitted to the department of pediatrics who gave evidence of focal infection were examined and it was possible to establish an exclusive or partial association with sinuitis in a number of instances. The closest, exclusively causal relationship was found in two other cases of infectious arthritis. In one of these, which was progressing rapidly with a regular fever, with pain on the slightest motion and marked deformity, including destruction of the joint surface, the first definite relief, after the tonsils and adenoids had been removed, was found in radical surgical intervention in the region of the sinuses.

If we refer to the daily notes taken and allow for the possible prejudice in the eye of the observer, there would seem to be no doubt, from the patient's own testimony and from the definite diminution of pain on passive motion, that almost immediate relief was obtained. The irrigation and the suction daily applied in the nose and throat department might have been regarded as unpleasant. In this and in one other case, these measures were even asked for by the patients themselves, when there were lesser returns of the symptoms in the joints. In these two instances the disease, while arrested, has not been definitely cured and the cause for this will be hinted at later.

Another patient with the same joint infection was discharged from the hospital, as no focal infection had been found. On his return one year later, the disease was found progressing definitely, and in the light of these communications, an operative examination of the sinuses will be made.

One striking example showed most clearly how infection of the sinuses might play a partially exciting rôle in disease.

A boy, aged 4½ years, in a fair state of nutrition was found to have a typical case of cyclic vomiting. Believing that the attacks of vomiting are aroused in by far the highest percentage of instances by respiratory infection led me to urge a topical examination of the nose and throat. Enlarged tonsils and infected adenoids were diagnosed, whereas sinus disease was only suspected by the aural surgeon, although it was my conviction that this trouble was present to a marked degree. For the sake of completeness, the antrums were punctured immediately after the removal of adenoids and tonsils, and pus was found on both sides. A more extensive antral operation, however, was not done at this time. The patient's condition was definitely improved, but an occasional attack of fever, with depression, malaise and digestive disturbance, has since been reported. The purulent nasal discharge has persisted.

Similarly, I have record of an instance in which the removal of the tonsils and adenoids brought out clearly the latent sinus trouble, as there is now a marked purulent nasal discharge with sneezing. Another patient, having repeated attacks showing unexplained high temperature and cyclic vomiting, was found to have a marked pansinuitis. Surgical treatment of the sinuses and the removal of the adenoids produced an almost critical cure. In this instance, of course, there is no definite proof that the sinuses were the sole cause of the trouble. One patient with asthma after surgical treatment of the infected ethmoidal cells has been free from attacks for nearly a year.

It was our fortune to observe in this clinic in the past three years a series of six most unusual cases[9] indicating a poisoning of the sensory or trophic nerves and leading to changes in the cornea, to painless dropping out of the teeth, the most intense peripheral pruritis, to weakness and muscular wasting, and, in two cases, to death. There is some evidence to indicate that this peculiar trouble may be due to nasal diphtheria of a chronic type. After seeing two such cases resist all treatment directed toward improving nutrition and

1. Barthez, A. C. E., and Rilliet, F.: Traité clinique et pratique des maladies des enfants, Paris, 1853; German Edition, Leipzig, 1844, **1**, 138.
2. Kohts, W. E. O.: Handbuch der Kinderkrankheiten (Gerhardt), Tübingen, 1878, **3**, Part 2, p. 27.
3. Onodi, A.: Jahrb. f. Kinderh., 1915, **31**, 159; abstr., The Journal A. M. A., March 27, 1915, p. 1113.
4. Hubbard, Thomas: Accessory Sinus Suppuration in Scarlatina, Am. Jour. Dis. Child., July, 1911, p. 11.
5. Skillern, R. H.: Sinusitis in Infants, The Journal A. M. A., Sept. 15, 1917, p. 895.
6. Oppenheimer, S.: Am. Jour. Obst., 1913, **67**, 397.
7. Phelps, K. A.: New York Med. Jour., 1917, **106**, 550.
8. Fourteen per cent. of all children recently examined in the Department of Otology and Laryngology of the State University of Iowa. Personal communication of Dr. L. W. Dean.
9. Byfield, A. H.: A Series of Trophoneuroses Probably Due to Infection, to be published.

end fatally, we decided in the next instance further to investigate the cause of the nasal discharge present. The nasal sinuses were found to be definitely infected. Surgical intervention was resorted to, routine irrigations were practiced, and within a week, the youngster, whose condition had hitherto baffled us, improved; and in a month or so, he was able to leave the hospital in good condition. Other disorders brought into more or less close association with sinus infection were chronic cough, nephritis (and there is some evidence to suggest that the chronicity of the renal process may be due to sinus infection), pyelitis and diphtheria organisms in carriers.

### ETIOLOGY OF INFECTION

The series of routine examinations made in the nose and throat department showing a high percentage of infected sinuses and the brief mention made of cases showing that in certain instances medical phenomena may be produced, requires certain discussion as to the etiology of respiratory infection in general. It is probably well understood by all that the germs which form part of our environment obtain access to the open tracts of the body within a very short time after birth. The type of germ and the location are probably determined by certain more or less accidental factors, among which might be mentioned climate; for there is no doubt that catarrhal troubles are more common in certain regions than in others. It is well known, for example, that the Pacific coast is remarkably healthful in this respect. The source of the germ is probably either in the personal environment or it may be introduced into the system accidentally by the food or from the ground.

The first of these sources, in my estimation, plays a part not sufficiently emphasized, in that there seems to exist "catarrhal families." I recall one family in which in the last two years four members have had severe respiratory infection, three having sinus involvement. Just how significant this is, further observation only can tell. This, of course, brings up the theory of the hypothetic elective power of germs, which, while interesting, is far from being proved as existing.

The child's constitution or power of resistance is also a variant in this struggle for survival between parasite and host, and the question as to the relationship of these two is neatly brought out in a conversation reported between a pediatrician and a nose and throat specialist. A child with a chronic nasal discharge was referred by the former to the latter for treatment, and the child was returned with a statement that if the pediatrician would build up the child's resistance, the infection would cease. The pediatrician, in turn, retorted that if it were possible to control the nasal discharge, the child's bodily condition would be improved. The situation was not greatly clarified by the consultation.

Exactly how the diet, the atmosphere and the temperature of the home (especially in winter) influence respiratory infection is not definitely known. That these are important factors, there is no doubt. These things, and other remote conditions causing reflex congestion of the nasal mucous membrane, undoubtedly interfere with drainage of the accessory sinuses of the nose and therefore may tend to prolong or aggravate a condition already existing. The age of the patient plays only a slight determining part in the trouble, sinus infection having been noted in the earliest weeks of life. As might be expected, those organisms that find their habitat in the nares and pharynx will be the infecting agents in sinus trouble. Further work along this line is necessary.

The pathologic changes in the chronic subacute types of this disease seem to be due, not so much to the formation of pus as to a submucous involvement with or without periostitis and to polyp formation. Pus, however, may be present and be recognized either by puncture or by the roentgen ray.

The question arises as to whether there are symptoms or signs pathognomonic or even indicative of the disease. As a result of the experience in this clinic, I have been accustomed to regard the existence of a persisting mucopurulent nasal discharge, especially when associated with frequent sneezing attacks, headache, depression, as indicating the need of further investigation in this direction. If these troubles are present after removal of the tonsils and the adenoids, one may be quite sure of their diagnostic significance. In older children, postnasal mucopurulent droppings are also seen, but it must be borne in mind that chronic adenoiditis may also produce this sign. The aggravation of symptoms and signs by cold and damp weather is also worthy of note. We may, indeed, overlook the presence of sinus disease in summer weather. Children with sinus infection, or at least those we have seen in our neighborhood, present a picture somewhat different from the so-called adenoid facies. In the former, there would seem to be a more distinct look of depression than in the latter. The diagnosis is finally made by a topical examination and the roentgen ray, but it must be borne in mind that because of the latency of the pathologic process the presence of the disease may be overlooked unless a radical exploration is made.

### TREATMENT

In discussing the treatment, I come to the most difficult and unsatisfactory part of my topic. The pediatrician is often conservative when it comes to surgical intervention, whereas the consultant may tend to see only the operative aspect of the disease. I should like to defer the expression of a definite opinion in the matter, except to say that drainage and clearing out of infected areas must certainly be practiced after other more conservative methods have been tried and found incapable of controlling systemic manifestations. Sinus infections are often notoriously resistant to any method of treatment, and this must be borne in mind in prognosis. One possible advantage of energetic intervention, however, might lie in the fact that a trouble which tends to be prolonged throughout a lifetime may be better controlled in childhood than in later years. It is our feeling that when asthma is due to nasal infection, usually of the ethmoids, surgical intervention is far more likely to cure or produce at least greater relief in childhood than in adults.

Nonsurgical treatment brings us face to face with the problem of combating chronic infection in general—a subject that is beginning to occupy the attention of the present-day medical men. We hear of nonspecific protein injections and we have heard of vaccines. In the end, we may have to admit that the persistence of infection is merely the index of the degree of the individual's ability to hold his own in the struggle for existence. It goes without saying

that in such cases as have been discussed, a control of the factors increasing nasal irritation and congestion must be attempted.

### CONCLUSIONS

It would seem, then, that the following conclusions are justified:

1. Infection of the accessory nasal sinuses is greater than has hitherto been commonly suspected.
2. The possibility of this infection as a source of general bodily involvement deserves more attention. In a series of cases including chronic digestive disturbances, persistent cough, occult temperature, poor general health, asthma, infectious deforming arthritis and cyclic vomiting, sinuitis has been observed, and a definite relationship between the infection and certain metastatic processes has been established.
3. Symptoms, such as chronic purulent nasal discharge (especially in winter), sneezing, headache, depression and irritability suggest the possibility of an infection of this region, provided that other etiologic factors have been excluded.
4. The diagnosis may be made by the roentgen ray, but exploratory puncture or even curetting may be necessary.
5. The treatment should be conservative and expectant unless the trouble persists and continues to affect unfavorably the health of the patient. In the light of our present knowledge, surgery is then indicated.

### ABSTRACT OF DISCUSSION

DR. R. U. ANDREWS, Mankato, Minn.: This very important paper brings out a few things we have undoubtedly overlooked. About a month ago I saw a child whose tonsils and adenoids had been removed, but the child did not improve. She had a profuse, purulent discharge from the nose. I had a specialist examine the child, and he found diseased ethmoid cells on both sides. These were operated on and the child recovered promptly. Unfortunately, nose and throat work is taken up by many who should not do it. I believe the greatest crimes in surgery today are committed in this work. The nose and throat surgery should be turned over to trained specialists. I recently saw a case in which the tonsils and adenoids had been removed, and in which a series of infections developed that were really quite serious. A part of the tonsil was left, producing a focus of infection and causing a great deal of trouble.

DR. HENRY J. GERSTENBERGER, Cleveland: Very recently a child came to our dispensary with a history of a mucopurulent discharge from the nose; when the child was bent forward a thin discharge poured out. The child also had choking spells. When I saw it the child had palsy of the soft palate, and when tipped forward a thin, seropurulent fluid escaped. My impression was that it must have come from the antrum. It was the first case I had seen, and the first time I had realized the possibility of an infection of the sinuses in infants. I had believed, with others, that they were so small in infants that infection could not occur. The Wassermann test was negative, and there was no history of diphtheria. I should like to ask Dr. Byfield if any of his cases have or have not shown palsy of the soft palate.

DR. JOHN ZAHORSKY, St. Louis: Many babies between two and five years of age whose adenoids are removed, have a purulent rhinitis as a sequel. This has followed in so many cases that I have been trying to find some explanation—whether the purulent rhinitis was a previous infection of the sinus, and the adenoid trouble was secondary, or whether the operation had something to do with infection of the sinus, or whether the taking out of the adenoid tissue interfered with some absorptive system.

DR. A. H. BYFIELD, Iowa City, Iowa: In presenting this paper I desire simply to call the attention of the members of the section to the existence of sinus disease in order that they may make more careful investigations in the future with possible relief to the patient. In regard to Dr. Gerstenberger's question, I will say that I have not seen any cases resembling the one he described. I have had the same experience in a number of cases as has had Dr. Zahorsky, and in the light of my present experience I would say that in these cases sinus disease had been latent or unrecognized. Removal of the tonsils permitting freer drainage then brought the unrecognized trouble into prominence. It is also theoretically possible that removal of the tonsils caused sinus infection, but I do not think this to be likely. Other investigations will be necessary to clear up that point.

DR. PAUL ARMAND-DELILLE, Paris, France: In France, in various institutions where I have been, they try to dissipate sinus trouble, especially in cases complicating measles, etc., by regularly at the beginning dropping into the nose eucalyptus and other oils. When it is done early these complications are lessened.

## SOUNDS HEARD IN THE AUDITORY METHOD OF MEASURING THE BLOOD PRESSURE

### THEIR MECHANISM AND SIGNIFICANCE*

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AND
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The working out of the main physical mechanism underlying the arm band method of measuring blood pressure by Luckhardt and Brooks[1] paved an easy way to the understanding of the sounds heard in the auditory method of measuring blood pressure. Brooks and Luckhardt also prepared a physical model which gave sounds somewhat similar to those heard from a pulsating, suitably compressed blood vessel. They described the mechanism of the sounds produced in experiments on this model, and suggested that the sounds heard in the auditory clinical method of blood pressure measurement might be produced in the same way as those heard on the model.

Since that time work has been carried on in the clinic with the purpose of gathering new and more accurate data concerning the sounds actually to be heard in clinical practice from the compressed artery under the arm band, and to see if the character of the sounds permits the satisfactory analysis and explanation according to the physical laws as described in the work by Brooks and Luckhardt referred to above.

It has been found that the sounds heard are not the same as those described by Korotkow and others, but there are a great many phases of sounds that have not heretofore been described. It is the main purpose of the present work to examine and describe what is to be heard from the arm during the auditory blood pressure measurement, and as far as possible to offer a satisfactory explanation of the mechanism of the production of these sounds.

The plan of study consisted of making observations in a large number of normal as well as pathologic cases and of recording accurately all sounds to be heard in each case. This plan has been carried out, the work extending over a period of more than two years.

* From the laboratory of physiology, Ohio State University, College of Medicine.

* Read before the Section on Pharmacology and Therapeutics at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Brooks, Clyde, and Luckhardt, A. B.: The Chief Physical Mechanism Concerned in Clinical Methods of Measurement of Blood Pressure, Am. Jour. Physiol., 1916, **40**, 49.

PHASES OF SOUNDS

In the normal adult, on raising the cuff pressure to a high level and allowing it to fall gradually, the following phases of sounds are heard:

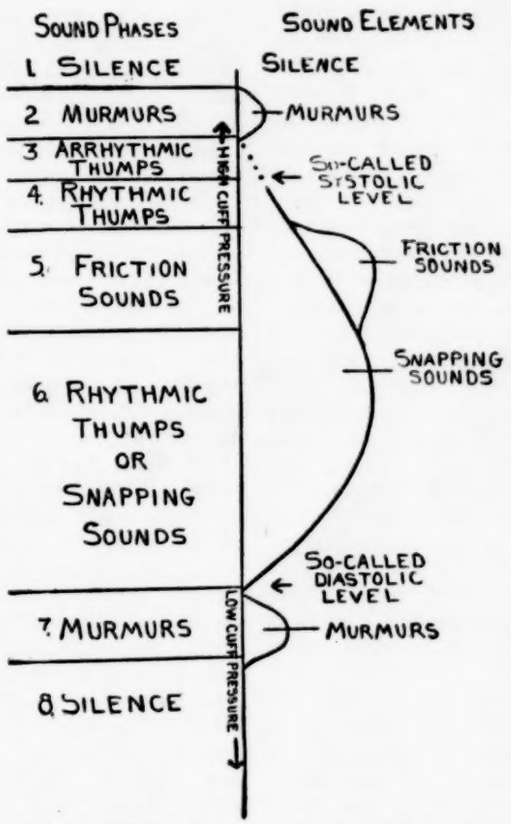
1. *Silence.*—This may be called the upper phase of silence. This extends from the second phase which is just below it, on up to any point higher.

2. *Murmurs.*—This may be called the upper phase of murmurs. These murmurs occur at the rather narrow area just before the third phase begins. The murmurs are soft and they remind one of swirling fluid. They are short in duration, and they occur at systole. In the great majority of cases these murmurs are barely distinct enough to be heard, but in some cases they are quite easily heard. In other cases they are not audible. These murmurs when heard extend over a very narrow limit, usually not more than 5 or 10 mm. in height. They seem to be more easily heard on patients with slim, soft arms, such as a child or a young woman whose arm is not very muscular.

3. *Arrhythmic or Desultory Snapping Sounds or "Thumps."*—These sounds occur at about every third or fourth systole. They occur singly, in pairs, or even in threes, and each one corresponds with a systole. These groups occur at about the end of inspiration, or at the beginning of expiration. The sounds are distinct, smart, snapping sounds or thumps, but at this stage they are not loud, though they can be easily heard. This phase is the beginning of that kind of sounds which are heard by every one on taking blood pressure by the auditory method. The only difference between this and the fourth phase is in the irregularity of the sounds. If the observer hears any sounds at all he will hear snapping sounds. Therefore, they are familiar to all clinicians. However, most observers have overlooked the beginning of these sounds when they are not regular. They sound something like the second sound of the heart, the "dup" sound, or as one internist who had just heard the irregular snapping sound for the first time said, "They remind one of the sound made by a sick cat in attempting to vomit." The snapping of the cat's diaphragm makes a sound not unlike these arterial sounds. They extend over a very narrow range of blood pressure, and for that reason are easily overlooked. These irregular snapping sounds can be heard in every case when the adjustment is suitably made. The line of demarcation between this phase and the next one below it is sharply defined.

4. *The Phase of Regular Rhythmic Snapping Sounds.*—These "thumps" are smart and distinct, and they grow louder as the cuff pressure is lowered. They are regular and they occur synchronously with systole. As the pressure in the cuff is lowered they continue to grow louder, and there gradually appears engrafted on them an added character which constitutes the next phase.

5. *The Phase of Friction Sounds or "Thump-sh-sh."*—This phase begins with a barely preceptible friction sound, "sh-sh," which is engrafted on the snapping sound; joined right on it and following it immediately, without any intermission, it sounds like a single sound. Close attention, however, reveals the dual character of the sound. The friction sound has a sharp, dragging character. It sounds like a friction rub. The double character of this sound may be imitated by thumping the fist down on the knee, and the instant the fist strikes the knee dragging the fist along on the knee for a short distance. This produces a thump when the fist strikes the knee, and immediately there follows a rub due to drawing the fist along over the knee. "Thump-sh-sh" is the nearest we can express this sound on paper. This fifth phase begins with the friction element of the dual sound, delicate and barely perceptible, but growing louder rapidly with further lowering of the cuff pressure. So much is this the case that in many instances the friction element soon becomes louder than the snapping sound so that it becomes difficult to note the "thump" which marks the beginning of the dual sound. This friction sound often becomes loud enough to resemble the Duroziez sound except that it is not double. After the friction element reaches the maximum it rapidly wanes on further lowering of the cuff pressure. By gradually shading off, it disappears, leaving the snapping sound alone once more. After all the friction element has died out this marks the end of the fifth phase and the beginning of the sixth.



Location and position of the various sound elements.

6. *The Phase of Regular Snapping Sounds.*—This may be called the lower phase of snapping sounds. The sounds are similar to those in the fourth phase, which may be called the upper phase of the snapping sounds. The only real difference in these two phases is that in the upper the sounds are growing louder, whereas in the lower they are growing fainter, as the cuff pressure is lowered. When finally the snapping sounds disappear this marks the end of the sixth phase and the beginning of the seventh phase.

7. *Murmurs.*—This may be called the lower phase of murmurs. These murmurs are much more constant and distinct than those of the upper phase of murmurs, or the second phase. They are soft and sound like some of the heart murmurs. They are heard only within a narrow limit of cuff pressure, and soon die out as the cuff pressure is gradually lowered. When these murmurs cease, it marks the end of the seventh phase and the beginning of the eighth phase.

8. *Silence.*—The lower phase of silence.

### SOUND ELEMENTS CONCERNED IN THE FORMATION OF THE VARIOUS PHASES

It will be noticed that all the various sound phases described above are made up of three fundamental elements, namely: (1) snapping element, (2) friction element, and (3) murmur. Silence, or absence of sound, need not be considered as an element here for its mechanism is well known. These elements run a rather similar course; that is, they begin faintly, grow stronger, reach a maximum, and then fade out gradually as the cuff pressure is gradually lowered. Beginning at a high level where there is silence and gradually lowering the cuff pressure, one encounters first the upper phase of murmurs. This narrow phase is soon passed, and the murmurs cease. After this comes the beginning of the snapping sounds. These are desultory at first, but become more frequent and finally regular, one for each systole. They also grow more distinct. After a still further lowering of cuff pressure they reach a maximum, after which they gradually fade and finally cease. The whole course of this snapping element is over a large area of pressure. It is the largest and most important element in the sounds of the artery.

The element of friction sound also begins faintly, grows louder, reaches a maximum, and then fades as the cuff pressure is further lowered. However, its upper limit, or level of beginning, is always lower than that of the upper limit of the snapping sounds. Also its lower limit, where it fades completely away, is not very far below the point of beginning. That is, it covers a rather short area from beginning to end. Therefore, it is engrafted on the upper area of the snapping sound, which extends well above its upper limit and far below its lower limit.

The lower element of murmurs is located below the lower limit of the element of snapping sounds. This element of murmur is short in extent from top to bottom.

The accompanying diagram will show the location and position of these various sound elements.

### THE MECHANISM OF THE PRODUCTION OF SOUNDS

Some of the phases of sound described in the foregoing may be accounted for quite satisfactorily, while others must for a while longer remain in doubt. The knowledge of the behavior of the artery during compression by the cuff affords an easy and satisfactory explanation of many of these sounds. Furthermore, such knowledge enables us to point out other sounds heretofore unnoticed and to offer an explanation of their mechanism. It was shown by Brooks and Luckhardt that an artery, during complete suppression of the arterial pulse by high cuff pressure, does not open at all, even at the highest point of systole. This occurs during the upper phase of silence. The artery remains throughout completely flattened, with no blood moving through it; but as the cuff pressure is gradually lowered, the level is reached where the segment of artery that is under the cuff opens with wedge shaped spaces at each end and with apple seed shaped spaces at the corners of the flattened tube. Even at the crest of systole the arterial segment is never entirely penetrated by the pulse pressure. But the blood rushes down into these wedge shaped and apple seed shaped openings just as they suddenly enlarge at systole. These blood currents most probably produce the indistinct and often unnoticed murmurs.

As the cuff pressure is still further lowered, the wedge shaped areas and the apple seed shaped areas increase in their penetration until at the crest of systole they break through the occluding pressure of the cuff. The result is the beginning of snapping sounds. Just as soon as a systolic pulse wave breaks through and opens the artery, there is a "thump" or snapping sound. The first of these are irregular or desultory in rhythm. That is, they occur in single thumps or in pairs or, with lower cuff pressure, in threes. Only the highest systolic waves, which occur at the end of inspiration or the beginning of expiration, are strong enough to break through. So at each respiratory rise in blood pressure there break through one or two systolic pulsations which produce a corresponding "thump." This accounts in a very satisfactory way for the irregular rhythm of the thumps in the beginning. As to the mechanism of the production of these sounds there is still uncertainty. Brooks and Luckhardt suggested, from the results obtained from the physical model, that they are due either to the thumping together of the two ends of the divided column of blood, or to the snapping together of the walls of the artery. The snapping open and sudden tension of the vessel walls might also be considered as a possibility. Of course, when the cuff is first applied to the arm and is gradually inflated, the first result is to occlude the venous outflow. This results in filling the veins. As the pressure is gradually raised in the cuff, the venous pressure rises with the cuff pressure. So when the arterial pressure is exceeded by the cuff pressure and when enough excess is added to compress the artery itself and completely suppress the pulse, then the pressure in the arm vessels (arteries, capillaries and veins) distal to the cuff is the same in all parts and equal to the systolic pressure of the artery just above the cuff. Now when the cuff pressure is lowered until the pulse again begins to break through at the crest of the highest systoles, when it does go through it meets the column of blood in the distal end of the arterial segment. No doubt these two ends of the divided column of blood strike together with some force. But at the same time there is a sudden outward fling or snap of the arterial walls. Also just afterward there is a sudden closing together of the arterial walls. It is to be remembered, furthermore, that thus far there is not yet any forward movement of the blood through the arteries. These are various possibilities for the production of the snapping sounds.

The next phase where the thumps become rather rapidly stronger and wholly regular, occurring at each systole, is explainable on the hypothesis that as the cuff pressure is lowered it reaches the level where all systoles break through. As soon as this is the case there are regular rhythmic snapping sounds or thumps, to be heard just below the arm band. The same analysis of the mode of production of the sound given above will be applicable here.

The mechanism of the production of the friction sound is plain. Its onset is marked by the actual beginning of movement of blood through the arteries. The arterial segment is flattened out and opens only partially. The blood, therefore, has to pass through a narrow slitlike opening, producing a friction or nozzle sound as it squirts through. As the cuff pressure is further lowered this flat nozzle is allowed to open a little wider and for a longer time, permitting more blood to squirt through. The result is a more pronounced and a lengthened friction or nozzle sound.

Indeed, it becomes in many cases so prominent that it overshadows the thump sound so that this element is frequently unobserved. The mechanism of the production of the friction or nozzle element is thus satisfactorily explained. The fading of the friction sound on further lowering of the cuff pressure is due to the promptness and completeness with which the arterial segment opens when the systolic pulse wave strikes it, and closes again when the systolic wave passes. There is no appreciable time when the artery is partially flattened with blood squirting through it. So the friction element of sound is lost, leaving only the snapping sound element. This gives rise to the sixth phase, or the phase of regular snapping sounds. The mechanism of the production of these sounds is the same as that of the fourth phase, or the upper phase of rhythmic thumps. The cuff pressure is lower and the artery is open during a longer period. The blood column is divided by the complete flattening and closure of the segment of artery under the cuff. Whereas in the fourth phase the artery opens only during a short portion of the time during each systole, that is, while the pressure in the artery is high enough to overcome the pressure in the cuff, in the sixth phase, the cuff pressure being lower, the artery remains open for a longer time, in fact, closing only when, during diastole, the blood pressure is lower than the cuff pressure. The snapping sound heard in the sixth phase is the same in character as that heard in the fourth phase. In the fifth phase it is the same snapping sound plus the friction sound which is added to it.

The cessation of the snapping sound is brought on by the further lowering of cuff pressure which results in the failure of the artery to close completely even at the lowest ebb of diastole. Here the cuff pressure is not strong enough to overcome the blood pressure plus the arterial resistance. This results in the failure of the arterial segment, which is under the cuff, to be collapsed, and also the failure of the artery to flatten results in the failure of the division of the column of blood in the artery. This results in the failure of the snapping sounds.

During diastole, however, when the pressure in the cuff is at the right level, the pressure within the artery plus arterial resistance is just about balanced by the cuff pressure; there results a sudden diminution in the caliber of the artery during diastole, and a sudden distention during systole. This is also accompanied by the increase and decrease in the size of the lower end of the arterial segment corresponding to the upper wedge shaped end of the arterial segment described above. Also there is a phase where at diastole the arterial segment under the cuff is partly flattened, but not sufficiently to cut off the blood flow or to cause the nozzle action, which produces the friction sounds. These alterations in size and shape of the cuff arterial segment cause vortices and other irregularities in the blood stream, which produce the murmurs heard in the seventh phase.

The phase of silence which results from still further lowering the cuff pressure is due to the fact that when the cuff pressure is insufficient to overcome the arterial pressure plus the arterial resistance, no impression is made on the artery, that is, there is no great change in caliber or shape of the artery on account of the cuff pressure.

### SIGNIFICANCE OF THE ARTERIAL SOUNDS

If these are the sounds which may be heard and the mechanisms by which they are produced, what is the criterion point which corresponds to systolic pressure? And what criterion point corresponds to diastolic pressure?

Unfortunately it is not yet possible to select a sound phase which will correspond to the true systolic, or one which will correspond with the true diastolic blood pressure. The reason for this lies in the fact that *the arterial pressure plus the arterial resistance are two factors that are inseparable by present methods of blood pressure measurements.* Therefore, it is not yet practicable to obtain the true systolic or the true diastolic blood pressures. Nevertheless we can measure the point where the cuff pressure just balances the systolic pressure plus the arterial resistance, and also we can measure the point where it just balances the diastolic pressure plus the arterial resistance. These two points can be located by the sounds and can be of great clinical use if their true significance is kept in mind.

These two points are located as follows:

The point where regular snapping sounds are first heard, or the beginning of the fourth phase, is the best criterion for the so-called systolic pressure reading. This point is easily recognized, and all clinicians could easily follow this practice. In fact, this is the point now commonly adopted by them. It is not the actual systolic pressure, but it is a definite point and has its clinical significance.

The point where all snapping sounds cease, or the end of the sixth phase, is the best criterion for the so-called diastolic blood pressure reading. Here, again, this is not the true diastolic pressure; but it is a definite point easily located, and if used would have a definite clinical value. Since there is no practicable way to obtain the actual diastolic, this point is the best criterion to use in the place of it. Some have already advocated the adoption of this criterion for the diastolic reading, but there is much disagreement in regard to it.

These two criteria, one for the so-called systolic, the other for the so-called diastolic, are the two most definite and most easily observed that can be found. Furthermore, the sounds are more sharply discernible than the alterations in size of pulse or artery, etc. So the auditory method is superior to the palpatory or sphygmographic methods involved in such as the Uskoff or the Erlanger apparatus.

### CONCLUSIONS

The beginning of regular, rhythmic snapping sounds is the best criterion point for use clinically in measuring the so-called systolic blood pressure.

The criterion for measuring the so-called diastolic blood pressure is the lowest point where the snapping sounds are heard, or where they just cease.

The auditory method of measuring blood pressure is more satisfactory than the palpatory or sphygmographic methods by the use of such instruments as the Uskoff or the Erlanger apparatus.

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## ABSTRACT OF DISCUSSION

DR. HENRY SEWELL, Denver: Investigators on this subject fail in one very important matter. If you make a long series of clinical observations by the use of the auscultatory method, you are almost certain to be struck with the fact that the evidences gained by the perception of sound differ according to the physiologic condition of the patient. Take normal people, with the normal conditions of blood pressure, and you will get a most beautiful portrayal of these sounds as the

books give them to us. Take a person suffering from so-called blood ptosis, a person in whom the systolic blood pressure reclining may be 120 mm. and in the standing position 100 mm., and, in my experience, in a large percentage of these cases, with the bell of the stethoscope on the artery, after the "pop-pop" of the first phase, maximum blood pressure, the sound soon dies out, and the succeeding phases of the sound are not heard, or heard with such small intensity that it is an agony to listen for it. This lapse of sound is especially frequent in the standing position of the patient. If you change from the bell stethoscope to the Bowles stethoscope you will hear those sounds much better. That weakening of sound phases after the first phase has given me enormous difficulty, because it is in the class of subjects which particularly interest me, and a class of subjects that I believe is vastly more numerous and important than the clinician takes account of; one in which the effect of gravity on the blood is not properly compensated by the heart and vasomotor system. A great many peculiarities are noticed in dealing with morbid cases which greatly puzzle one. For example, in cardiovascular-renal cases the maximal blood pressure may reach, say, 240 mm. of mercury. The sounds may soon die out and not reappear again until the pressure in the mercury column has dropped to, say, 210 mm., from which point the sound phases proceed as usual. It would be easy in such a case to mistake 210 mm. for the maximal pressure. That has been my experience. I hope somebody more competent will criticize me and show me my errors. I came here to get information. This is practical data in which the physiologists do not help us one particle, because they seek to deal with normal people. There is still a deal to be done as to the relations of the respiratory movements with the maximum blood pressure.

With certain pathologic cases, functional and organic, one often sees evidence of periodic waves of blood pressure much longer and deeper than those due to respiration. My maximal blood pressures practically always occur in the phase of expiration, contrary to the findings of some recent observers.

Dr. Arthur D. Hirschfelder, Minneapolis: I was very much interested in this paper and also in Dr. Sewall's remarks. My own experience, which was gained chiefly some years ago when the Korotkov sound method first came out, was somewhat similar to Dr. Sewall's as regards the low blood pressures. We found, when we first began to study blood pressures in Baltimore, that the so-called auscultatory method was very satisfactory with arteries of normal size; but when we got to dealing with small, not well filled arteries, or small arteries in a state of vasoconstriction, somewhat similar to the type of case Dr. Sewell mentioned, there was sometimes a great deal of difficulty in getting the sounds. As Dr. Sewall said, we found that there is in this type of case also a great deal of difficulty in getting satisfactory evidence by any method, frequently even by the method of Erlanger with the graphic method for determining diastolic pressure; it is difficult to feel the maximum oscillation of the artery using the Korotkov method, difficult to record it with the Erlanger apparatus and difficult to get the sound changes with the auscultatory method. One is faced with the choice to find the lesser of the two evils. I believe that when you can get the sounds at all by this method it presents least of the evils in the determination of blood pressure.

I would like to mention one thing:

Last Christmas, in Minneapolis, Erlanger of St. Louis made a very interesting demonstration of a model showing the mechanism of the production of the arterial sounds. He used a very thin walled tube which was alternately filled with water from a reservoir and clamped off. It was kept collapsed until the wave of liquid came through, when it suddenly passed from a state of complete collapse into distention. A sound was heard when the wave passed under that part of the tube which was under the stethoscope. This corresponds to the systolic sound. This occurred only when the artery had been completely collapsed, and not when it was only partially so; and that explained why we do not get the sound through diastole.

Dr. Arno B. Luckhardt, Chicago: I cannot answer Dr. Sewall's question, and I shall not refer to Dr. Hirschfelder's, but the proposition generally was this: Some arbitrary rules had been laid down about the measurement of blood pressure and they did not seem quite logical to us; and since they were based on premises that had no conclusive experimental evidence for their foundation, we decided to work this thing out. The first thing done was to construct a physical pump and have physical arrangements fixed so that we could take one factor at a time and leave the others constant. On this model systolic and diastolic pressures were measured by the arm band cuff method. In the paper just now presented it was pointed out that some factors are quite different in pathologic states from what they would seem to be under physiologic conditions; and one factor emphasized in that paper was the importance of the knowledge of the tension and elasticity and condition of the arterial wall. With the apparatus, such as it is constructed, work will be carried on. This work is an extension of the work to the sounds heard over arteries, with their various forms of resiliency and elasticity, and various forms of thickening, with the hope that light may be thrown on the significance of the criteria for making diastolic and systolic blood pressure measurements and the effect of treatment of blood pressure under various pathologic conditions. This work was begun, first, to show the fallacy of the criteria used in establishing diastolic and systolic pressures in common use; second, to investigate the sounds heard over arteries thoroughly, and, third, to make use of these sounds in pathologic conditions where the character of the arterial wall is of great consequence in drawing conclusions as to the usefulness of the blood pressure measurements.

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## BOTULISM

### A METHOD OF ISOLATING BACILLUS BOTULINUS FROM INFECTED MATERIALS *

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During recent years we have been recognizing outbreaks of food poisoning caused by the ingestion of canned vegetables and fruits, in which the symptoms of the victims were those of botulinus intoxication. In every case that has come to my knowledge, home-canned products have been the cause. Not only have human beings been poisoned, but domestic fowl and animals have also been affected after eating home-canned food. In many cases there has been coincident intoxication of human beings and domestic fowl or animals, the fowl or animals having been fed remnants of the food which had caused the poisoning of the human beings (Table 1); but in other instances the poisoning of the domestic fowls or animals occurred independently of poisoning of human beings, because they were fed spoiled home-canned vegetables which had been recognized as spoiled and unfit for human consumption (Table 2). The majority of the recognized outbreaks of botulism have occurred on the Pacific Coast, but cases are being discovered in other portions of the United States, and it is probable that the causative factor, *Bacillus botulinus,* is widely distributed throughout the country.

In our investigation of outbreaks of botulism on the Pacific Coast, we have succeeded in establishing the diagnosis in seven cases by the isolation of *B. botulinus* from materials that were collected for examination (Table 3). In our earlier attempts to recover the organism we encountered considerable difficulty, but

* Aided by a grant from the California State Council of Defense.
* From the Laboratory of Experimental Medicine, Stanford University Medical School

eventually we adapted methods which have proved to be quite satisfactory, and which we hope may be of some assistance to laboratory workers who are called on for the first time to investigate an outbreak of food poisoning of this kind.

In our routine work with *B. botulinus* we have employed only three kinds of culture mediums, glucose-infusion agar and glucose-infusion broth, prepared according to the formula given by van Ermengem[1] and sheep's brain medium, since the identification of this bacillus can more easily be established by the demonstration of its characteristic toxin than by the study of its imperfectly understood cultural reactions in sugars and other mediums. Standard test tubes are filled to a depth of from 3½ to 4 inches of medium, about 10 to 12 c.c., and the broth and brain mediums are covered with liquid petrolatum. The reaction of the mediums should be slightly alkaline to litmus, and sterilization should be accomplished by the fractional method in the Arnold steam sterilizer, heating for twenty minutes on each of three consecutive days.

TABLE 1.—INSTANCES IN WHICH DOMESTIC ANIMALS AND FOWL WERE POISONED BY EATING THE REMNANTS OF HOME-CANNED FOOD WHICH HAD CAUSED THE POISONING OF HUMAN BEINGS

| Date | City | Persons | | Limber-Neck | Cause of Poisoning |
|---|---|---|---|---|---|
| | | Ill | Died | | |
| 1907 | Ontario, Calif. | 3 | 3 | 12 chickens | Canned pork and beans |
| 1912 | Romley, Colo. | 7 | 5 | 5 burros | Canned beans |
| 1912 | North Yakima, Wash. | 6 | 3 | 12 chickens | Home-canned asparagus |
| 1913 | Hornbrook, Calif. | 1 | 1 | 50-100 chickens | |
| 1915 | Fallbrook, Calif. | 5 | 5 | Several chickens, 1 dog* | Home-canned apricots |
| 1915 | Hillsboro, Ore. | 1 | 1 | 50 chickens | Home-canned corn† |
| 1916 | San Jose, Calif. | 1 | 1 | 8 chickens | Home-canned string beans† |
| 1916 | Escondido, Calif. | 1 | ... | 25 chickens | Home-canned string beans |
| 1917 | Seattle | 3 | 3 | Several chickens | Home-canned asparagus† |
| 1917 | Ontario, Ore. | 1 | 1 | 39 chickens | Home-canned string beans |
| 1918 | Madera, Calif. | 8 | 6 | 30 chickens, 1 turkey | Home-canned apricots† |

* The animal was ill but recovered.
† B. botulinus was isolated.

Immediately before the mediums are inoculated they should be boiled for at least twenty minutes. The fluid mediums, broth and brain, are quickly cooled by plunging the tubes into cold tap-water, but the agar is cooled only to from 45 to 47 C., a temperature at which the 2 per cent. agar medium is of sufficient fluidity to permit of thorough admixture with the material with which it is inoculated, and which has proved to be entirely safe when we are dealing with *B. botulinus* or its spores. Immediately after the agar medium is inoculated, it is also plunged into cold tap-water, and left until it has solidified, and the stoppered end of the tube is then sealed with a wax prepared from paraffin, beeswax and zinc oxid to prevent evaporation and shrinkage. All culture tubes are incubated at from 26 to 28 C., the optimum temperature of *B. botulinus*.

The points which we consider essential for the identification of *B. botulinus* are:

1. The demonstration of large, gram-positive bacilli with rounded ends and terminal spores.
2. The occurrence of anaerobic growth of characteristic appearance in glucose-agar cylinders with formation of gas and fragmentation of the medium.
3. The blackening of brain medium.
4. The characteristic growth in glucose-infusion broth, with the production of a virulent toxin which can be demonstrated in filtered broth by the inoculation of susceptible animals, and which is neutralized by specific antitoxic serum prepared by immunizing goats to the toxin of known *B. botulinus*.

1. Van Ermengem, in Kolle and von Wassermann: Handbuch der pathogenen Mikro-organismen, 1912, **4**, 921.

The odor of *B. botulinus* cultures is quite characteristic, somewhat like rancid butter or certain kinds of cheese, and is frequently of sufficient strength, even in mixed cultures, to give a clue to the presence of this organism.

We have found that we are able to recover *B. botulinus* from contaminated material with much greater ease and in a much shorter time by fishing the characteristic colonies from a thinly seeded agar cylinder than from deep agar plates that have been incubated in an atmosphere of hydrogen. It is important that the agar cylinders be very thinly seeded in order that there may be room for the typical development of the individual colonies, and sufficient separation of the colonies to allow for observation and for isolation. In practice we have found that one small loop of the suspected material in about 12 c.c. of glucose-agar will give the required dilution, but usually it is advisable to make successive dilutions as in preparing gelatin cultures for plates. In the majority of cases the optimum time for fishing the more favorably appearing colonies is on the third or fourth day; but the tubes should not be discarded if no typical colonies have appeared by that time, as sometimes they do not appear for from six to ten days.

Our method of fishing the colonies is to file and break the tubes about half an inch below the lowest suspected colony, to force out the agar cylinder from above until the colony is just below the broken rim of the tube, to sterilize the exposed surfaces of the medium with a heated platinum wire, and to fish the colony through the sterilized surface. We have found that a dissecting microscope gives sufficient magnification and allows much greater freedom of movement for this procedure than does the ordinary laboratory microscope.

TABLE 2.—INSTANCES IN WHICH ONLY DOMESTIC ANIMALS AND FOWLS WERE POISONED BY EATING DISCARDED, SPOILED HOME-CANNED VEGETABLES

| Date | City | Limber-Neck | Cause of Poisoning |
|---|---|---|---|
| | Escondido, Calif. | 25 chickens | Home-canned string beans |
| 1914 | Escondido, Calif. | 80 chickens, 6 turkeys | Home-canned string beans |
| 1915 | Madera, Calif. | Several chickens | Home-canned string beans |
| 1915 | Santa Ysabel, Calif. | 130 chickens, 30 turkeys | Home-canned string beans |
| 1917 | Hanford, Calif. | Several chickens | Home-canned corn |
| 1917 | Visalia, Calif. | Several chickens | Home-canned corn |
| 1917 | San Jacinto, Calif. | 58 chickens | Home-canned corn |
| 1917 | Berkeley, Calif. | 52 chickens | Home-canned string beans |
| 1918 | Berkeley, Calif. | 12 chickens | Home-canned string beans* |
| 1918 | Hollister, Calif. | 2 hogs† | Home-canned peas |

* B. botulinus was isolated.
† The animals were ill but recovered

The isolated colonies are transplanted to glucose-agar, glucose-broth and brain medium. In glucose-agar, if one has succeeded in obtaining a pure culture, the growth usually becomes visible in from thirty-six

to forty-eight hours, and the upper surface of the growth is sharply defined about 1 cm. below the surface of the medium. Gas formation occurs soon after, and by the third day the agar column is usually fragmented. In glucose-broth a diffuse cloudiness appears at about the same time as the growth becomes visible in agar, but within a few days the cloud begins to settle and within a week or ten days the upper portion of the medium is clear and the bacterial growth is seen as a flocculent sediment at the bottom of the tube. The broth is usually allowed to incubate for one month before it is filtered through a diatomaceous filter and tested for the presence of virulent toxin. The growth in brain is quite profuse, and numerous spores are usually formed within a few days. The medium becomes blackened in from ten days to six weeks.

Occasionally one is able to obtain an unopened jar or can of home-canned vegetables or fruit in which there is a pure culture of *B. botulinus* and in which there is virulent toxin. Under such circumstances the bacteria can be recovered directly by inoculation of suitable mediums, and the presence of the toxin and

TABLE 3.—SOURCES FROM WHICH OUR SIX STRAINS OF THE B. BOTULINUS WERE ISOLATED

| Date | City | Cause of Poisoning | Strain | Material from Which B. Botulinus Was Isolated |
|---|---|---|---|---|
| 1915 | Hillsboro, Ore. ..... | Home-canned corn | IV | Contents of gizzard of chicken |
| 1916 | San Jose, Calif. .... | Home-canned string beans | III | Contents of crops and gizzards of three chickens |
| 1917 | Escondido, Calif. .. | Home-canned string beans | V | Contents of can of beans obtained from cellar |
| 1917 | Seattle..... | Home-canned asparagus | VII | Contents of crops and gizzards of seven chickens |
| 1918 | Berkeley, Calif. .... | Home-canned string beans | VIII | Contents of three jars of beans which were obtained from closet, and of gizzards of two chickens |
| 1918 | Madera, Calif. ..... | Home-canned apricots | IX | Contents of gizzard of chicken |
| 1918 | Hollister, Calif. .... | Home-canned green peas | X | Feces of two sick hogs |

the specificity to known antitoxin can be tested in the juice or syrup from the container. Usually, however, the *B. botulinus*, if present in the jar, is associated with other spore-bearing bacteria, usually with *B. subtilis*, and in order to obtain a pure culture it is necessary to inoculate glucose-agar cylinders and fish for the characteristic colonies. But even here the problem of identification is greatly simplified, since the production of toxin is not prevented by the presence of the other bacteria, and its presence may be detected and its type tested by injecting the filtered juice or syrup from the infected container.

More often, however, the investigation must be made of remnants of the poisonous food that have been discarded, and the problem is much more difficult. Occasionally one may gather fragments of the discarded food from among the garbage, but usually this is not possible since the onset of the symptoms is so delayed that the garbage pail no longer contains the remnants of the food that caused the poisoning. We have examined four separate lots of suspected food that was recovered from garbage several days after the onset of the symptoms of poisoning, but did not succeed in isolating *B. botulinus*. Usually the only hope of recovering the organism lies in bacteriologic examination of the contents of the crops and gizzards of chickens that have died after eating the discarded food, or of the intestinal canal of human beings or of animals that have been poisoned. We have succeeded in recovering four strains of *B. botulinus* from the contents of the crops and gizzards of chickens that died after eating spoiled home-canned foods (thirteen chickens in all, Table 3), one from the feces of two hogs which became ill after eating spoiled home-canned green peas, and one from the intestinal content of a hog which we had experimentally inoculated by feeding. We did not succeed in recovering the organism from the contents of the intestinal tract of the one human victim in which we obtained necropsy before the body was embalmed.

The contents of the crops and gizzards or of the intestinal canal are mixed with sterile physiologic sodium chlorid solution in bottles or in flasks which are large enough to allow of thorough shaking. A portion of the mixture is then removed and heated at 60 C. for an hour, and parallel inoculations of heated and unheated material are made into glucose-agar and glucose-broth. The glucose-agar tubes are inoculated with minute amounts of the material for the reasons already discussed, but the glucose-broth tubes are inoculated with relatively large amounts, from 0.25 to 1 c.c. of the saline suspension.

The glucose-agar cultures are examined for characteristic colonies in from forty-eight to seventy-two hours after inoculation, but, as stated before, the cultures should not be discarded for at least two weeks if they appear to be negative. The presence or absence of gas in these cultures cannot be considered as conclusive evidence for or against the presence or absence of *B. botulinus*, as many other gas-forming bacteria may be present in the culture, or colonies of *B. botulinus* may be insufficiently developed to have caused the splitting of the glucose-agar.

The glucose-broth cultures are allowed to incubate for about one month before they are disturbed. A portion of the broth is then passed through a diatomaceous filter and 1 c.c. is injected subcutaneously into a guinea-pig. If virulent toxin is demonstrated by the death of the animal, a series of inoculations is made to determine the degree of virulence of the toxin, and the specificity and type as tested with specific antitoxic serums. If no virulent toxin can be demonstrated, the medium is discarded; but if there is a toxin, minute portions of the unfiltered portion of the medium are transplanted into glucose-agar, and the characteristic colonies are fished when they appear.

We have occasionally succeeded in obtaining *B. botulinus* in pure culture from glucose-agar cultures that had been inoculated with the original saline mixture; but we have been much more uniformly successful with the glucose-broth cultures that had been incubated for one month. We have never failed to obtain the organism in pure culture from the broth in which a virulent toxin had developed.

Occasionally *B. botulinus* may be recovered from the spleen of a human or animal victim of botulinus poisoning. We did not succeed in obtaining a culture from the spleen of our human case in which we performed necropsy before the body was embalmed, but in one instance (Strain III) we obtained a pure culture from the spleen of a rabbit that had been given intravenous injection of a contaminated broth culture. This method of separation does not appear to be

reliable, however, as repeated trials with other strains of *B. botulinus* have always been unsuccessful. The technic of making cultures from the spleen does not differ in any way from that of making routine cultures from tissues at the necropsy table. Portions of the spleen are removed through a seared surface, and inoculated into glucose-agar and glucose-broth culture tubes. We have not found it necessary to grind up the tissue before inoculation, as *B. botulinus*, if present, will soon spread out from the small pieces of tissue. If cultures are obtained, the bacilli are isolated and identified in the manner already described.

## INTRARECTAL ADMINISTRATION OF ARSPHENAMIN

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It is not the intention of this paper to discuss the value of arsphenamin when used alone, or its relative value when used in conjunction with other drugs. Its value as an antisyphilitic remedy, especially in the early stages of the disease, is undoubted, and the prompt response obtained from its use to the acute and subacute manifestations are generally gratifying.

As to its mode of administration, the most convenient and accepted method at present is by the intravenous injection. Next to this stands the intramuscular injection. We are each day learning more and more about the untoward effects and even the fatalities that sometimes accompany the former route. Sargent's[1] experience with arsphenamin administered by intravenous injection is not at all encouraging.

We have never attempted the intramuscular injection of arsphenamin or neo-arsphenamin. There are strong objections to it, even when it is carefully prepared in an oily suspension. The chief objection is the pain accompanying the injection, to say nothing of the more intense pain and subsequent swelling, lasting for several days. In addition there is always the danger, especially in obese patients, of a possible abscess formation.

Further, there are few in the medical profession who have not at some time been confronted with the problem of administering arsphenamin or neo-arsphenamin in some patient in whom the intravenous method was almost a practical impossibility, unless a dissection of the vein was resorted to. The latter procedure cannot be very desirable when the injections are to be repeated, as is most often the case. Also, it is well known that arsphenamin and neo-arsphenamin are very irritating to the subcutaneous tissues, even in small quantities, causing painful indurations. When these occur in the elbow, the most preferred site of injection, there is impairment of motion for weeks or months.

Again, it stands to reason that when a toxic drug like arsphenamin, and, to a less extent, neo-arsphenamin, is suddenly thrown into the system by the most direct route, the blood stream, whence absorption in toto is almost immediate, its possible dangers must be reckoned with, when we consider the immediate reaction: fever, headache, dizziness, nausea and vomiting, or the more severe subsequent reactions, such as damage to the eyes, the skin, the liver or kidneys, and even fatal termination. Even when patients are properly prepared, and likewise carefully selected, every physician experiences these untoward effects sooner or later. We had two striking instances in Cases 1 and 4, discussed later, in each of which the patient showed a rather severe reaction after the administration of neo-arsphenamin and arsphenamin, respectively, by intravenous injection, but no bad effects after a number of intrarectal injections. Further, when the drug is quickly absorbed it is eliminated with relative rapidity, so that its curative power lasts only a short time. For this reason, a method in which the arsphenamin is more slowly absorbed, offering a more prolonged and so probably a more effective curative method, is to be preferred. It is for this reason that some therapeutists are inclining to greater use of the intramuscular administration of the drug. This was not the real point, however, in our seeking another method of arsphenamin or neo-arsphenamin administration.

Syphilis is a common disease everywhere, but is especially prevalent in Panama. The number of our routine Wassermann tests on hospital patients averages one-third positive. Further, obesity is very common among our native women after marriage, and it is at this time when many of them contract the disease from their husbands. Hereditary syphilis, too, is common among the children. We were for a time confronted with the problem as to how to administer arsphenamin and neo-arsphenamin in these types of cases, and also in some very anemic, nervous women with small, collapsed veins. We learned that intrarectal arsphenamin had been tried by some French physicians, and, though we could not find the original record, we decided to give this method a trial.

The method we used is very simple. The arsphenamin or neo-arsphenamin is prepared just as in the intravenous method and can be made up with a similar or smaller amount of fluid, from 25 to 50 c.c. for neo-arsphenamin and about 100 c.c. for arsphenamin. The patient is put to bed and the solution is allowed to run in slowly, allowing about ten minutes for the injection. The patients, especially children, were urged to retain it. We preceded the injection by a cleansing enema, and, in the early cases, elevated the buttocks and also the foot of the bed. These steps are unnecessary, though a cleansing enema is a good procedure to adopt and in children the extra precautions are also wise. Injections may be given safely every three days, the full dose for men and women being 0.9 gm. of neo-arsphenamin or 0.6 gm. of arsphenamin, and for children, 0.1 gm. for each 25 pounds of body weight.

At first we checked up our cases by titrated Wassermann tests in ten dilutions, conducted by Dr. Gorton at our laboratory. Out of nine cases worked out by this special titration, five showed a moderate or complete improvement in the Wassermann reaction, and the other four showed little or no change. In the remainder of the cases, numbering about thirty-five, the routine Wassermann test was done. What we were interested in chiefly, however, was clinical improvement in the symptoms, which included skin, bone, joint and glandular lesions, and also improvement in general health.

Our series is, indeed, very small, as most of our patients are charity patients, unable to purchase the

1. Sargent, J. C.: Toxicity of the American-Made Arsphenamin (Salvarsan), THE JOURNAL A. M. A., March 30, 1918, p. 908.

needed drug, and the cases for arsphenamin treatment are too numerous to permit the hospital's free administration. At first we treated a small number of patients, whom we used for experimental purposes, and later when we had demonstrated the efficacy of the method to our own satisfaction, we treated patients unfitted for intravenous injection who needed the arsphenamin.

We do not desire to discuss each case, but some were so striking in their response that they are worthy of individual consideration. In general, we might say that the majority of patients showed improvement from symptoms after from three to five intrarectal injections, even when the Wassermann reaction remained unchanged, often, perhaps, because the patients left too early, either demanding their discharge or being discharged for other reasons.

### REPORT OF CASES

Case 1.—R. G., a middle-aged married man, admitted Aug. 21, 1917, complained of a leg ulcer over the left thigh above the knee and a tumefaction at the back of the elbow. He had had the ulcer for about one year and the tumor for several months. He also felt run down in general health. The ulcer was about the size of a silver dollar, chronic in appearance, with a highly indurated margin. The elbow tumefaction was about the size of a walnut and impaired the motion of the elbow to some extent. It was smooth, firm and apparently a gumma. The patient had general glandular enlargement, was anemic and had a ++++ Wassermann reaction.

After four intrarectal injections of French neo-arsphenamin, the ulcer had almost completely filled in, the gumma was reduced to about one-fourth its size, and the patient was feeling much better. He was discharged shortly after, to return for more treatment later, and after several weeks was given an intravenous injection of neo-arsphenamin. Immediately after the injection the patient grew dizzy, had to remain at the hospital for a while, and told us later that at home he developed a chill and a rather high fever and was nauseated. He refused to take any more intravenous injections after his experience with both methods. His last Wassermann test, about two months after his first admission, persisted in full strength, ++++.

Case 2.—A. C., a young married woman, very obese, was admitted, July 10, 1917, with a history of headache and pain extending down her spine and growing worse at night. She had also had twelve abortions. Her Wassermann reaction was +++.

After five intrarectal injections of neo-arsphenamin, her symptoms disappeared and her general health was improved. Her Wassermann reaction was negative. Seen a short time ago, she still reported excellent general health and no abortions since her treatment. We were disappointed in her negative history concerning pregnancy.

Case 3.—J. de C., a young and exceedingly anemic woman, married, was admitted, Feb. 5, 1918, with a history of metrorrhagia and a general run down condition. The following day a curettage was performed, but during the night before the operation, she had had a slight rise of temperature. This grew steadily worse, the temperature climbing and the pulse increasing in rate, until the patient appeared quite sick. On admission she had had a fading eruption which grew marked during the fever. She also developed an outspoken palmar and plantar syphilid. We were inclined to regard the whole picture as one of secondary syphilis, especially in the presence of a ++++ Wassermann reaction; but the extremity of the picture, especially the febrile reaction, from 39 to 41 C. (102.2 to 105.8 F.), and her apathy gave us sufficient anxiety to request a Widal reaction and a blood culture, both of which were negative. The blood was negative for malarial parasites also, and the fever failed to respond to quinin.

After the first intrarectal injection of French neo-arsphenamin, 0.9 gm., the patient showed some improvement and continued to do so after subsequent similar injections. After the fourth injection, the temperature came to and remained at normal, and after a few days the patient was up and about, quite herself again, all the skin manifestations having disappeared completely. The last Wassermann reaction taken about a month after her last injection was negative.

Case 4.—M. de A., a woman, admitted, April 14, 1918, had been married seven months. Three months after marriage, she had had a facial neuralgia and heat flushes, and also some fever and a general eruption. These symptoms had disappeared, to be followed, shortly before admission to the hospital, with sores in the throat and around the vulva and vagina, the latter being associated with agonizing pain, painful micturition and insomnia. Her Wassermann reaction was ++++. Her husband's reaction had been the same. Mucous patches were present on the posterior pharynx, and ulcerated condylomas in the vagina and on the vulva.

The patient was first given an intravenous injection of the Farbwerke-Hoechst brand of arsphenamin, 0.4 gm., after which she was very sick, felt feverish and nauseated, and had an epileptiform convulsion. She begged not to be given any more intravenous injections. After this she was given four intrarectal injections of arsphenamin, 0.6 gm. each time, suffering no reaction. Her lesions disappeared entirely and she felt much improved, being discharged, May 1, 1918, sixteen days after admission, to continue treatment outside the hospital. Her Wassermann reaction at this time was still ++++.

In addition to the patients mentioned, we have had two other patients with persistent relapsing fever that responded to intrarectal injections of neo-arsphenamin, each receiving three or four injections.

Case 5.—P. de A., an extremely obese, middle-aged woman, before admittance to the hospital had had high fever, which failed to respond to quinin by mouth or hypodermically. On admission, she still had fever ranging between 39 and 40 C. (102.2 and 104 F.) and pains in the joints. The blood was negative for malarial parasites and the relapsing fever spirochete, and the Wassermann reaction was negative. The patient's body showed evidence of a mottled, faded eruption, suspiciously suggestive of syphilis. Her temperature fell to normal after intrarectal injections, and she had completely recovered after four injections.

Case 6.—E. G. de V., a young woman, was admitted to the hospital, Feb. 19, 1918, with acute appendicitis. The appendix at operation was found gangrenous, ready to rupture, and the cecum near its base appeared gangrenous. In spite of the fact that there was evidence of a fecal fistula on the fourth day, the wound drained well and seemed to be closing up, with no further evidence of trouble in the abdomen. About a week after the operation, the patient's temperature, which had fallen almost to normal, began to run a four or five day relapsing fever course, with occasionally chilly sensations. This condition showed no improvement with hypodermic injections of quinin or quinin by mouth. The blood on being examined the second time for malaria, revealed no parasites, and was negative for the spirochete of relapsing fever. The patient asserted that she felt very well after her first intrarectal injection of neo-arsphenamin, 0.9 gm., and her temperature remained practically at normal from that time on, though she was given two subsequent injections. She was discharged, March 19, 1918, just one month after operation, feeling very well and with the wound practically closed.

### SUMMARY

It is interesting to note that, after the intrarectal injections, not a single patient showed the slightest reaction, whether the Farbwerke-Hoechst brand of arsphenamin or the German or French neo-arsphenamin was used. During these arsphenamin courses we tried to eliminate all other forms of antisyphilitic treatment, and while we can make no detailed statement as to the relative value of these preparations, we have found the results more or less encouraging with all.

We strongly urge the trial of this method on those connected with institutions who can and do give arsphenamin to patients gratis.

### CONCLUSIONS

1. The intrarectal administration of arsphenamin is a successful method of treating syphilis and relapsing fever.
2. The untoward effects are practically eliminated by slower absorption.
3. The method requires no special skill in administration, and can be entrusted to a nurse or to the patient himself.
4. The dosage can be increased by this route and given as often as every three days.
5. It is the method of choice in nervous subjects, in obese or very anemic women, and in children.
6. It offers at least the same curative value as the intravenous route.

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## HAY-FEVER RESORTS IN THE UNITED STATES AND CANADA

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As it has been definitely established that hay-fever is due to the inhalation of pollen,[1] it would appear to be simply a question of eliminating all wind-pollinated plants from certain areas in order to abolish this disease. This has been actually demonstrated in a number of places, which have in this way acquired considerable popularity as hay-fever resorts. All weeds and grasses are scrupulously cut not only by city ordinances, which are strictly enforced, but also through the influence of public opinion, as the visitors are a source of profitable revenue. The freedom from hay-fever in these places is due to the fact that all weeds and grasses with wind-borne pollen[2] are rigidly excluded.

The history of hay-fever resorts, before pollen was discovered to be the cause, forms an interesting example of the unreliability of health measures when not based on scientific principles. A sufferer from hay-fever, in his efforts to find a location in which he will find relief, reaches a location many miles from human habitations and cultivated fields, perhaps in a virgin forest, and his attacks disappear. He pitches his tent, passes his time in fishing and hunting, and returns home convinced that he has at last found the Mekka of hay-fever sufferers. The place is advertised, cottages are built and perhaps even a hotel, and the first year the reputation is sustained—no one has hay-fever.

The next year, the plans are extended. The timber is cut and the land is planted in corn and oats for the stock, and vegetables for the guests. Immediately the seeds of the weeds, the parasites of agriculture, are brought in by the stock, the hay, oats and seeds, and the weeds appear with their millions of noxious wind-borne pollen.

The guests now begin to suspect that the location is not entirely free of hay-fever. The following year the weeds have increased in number and activity, and the pollen abounds in the air. Hay-fever is common, the guests leave in disgust, and the place is abandoned. This history of the rise and fall of hay-fever resorts has repeated itself in almost every part of the country.

The recently established resorts, however, being scientifically based on the exclusion of all weeds, have maintained their reputation and increased in popularity. It is only a question of time, however, when every summer resort will be compelled, in its own interest, to take similar steps for the comfort of hay-fever sufferers. The elimination of hay-fever in towns and cities generally is simply a question of time, this result depending on the thoroughness with which the weeds are destroyed.[3]

It is popularly believed that hay-fever is gradually increasing, and this is supported by the statistics which we have collected from all parts of the country. The cause, however, is not the increase of susceptibility as is usually supposed, but of exposure. It is well known that hay-fever is less frequent in the heart of crowded cities, and many living in the suburbs find relief at their places of business. The reason is that these congested parts of the cities are beyond the potential radius of the hay-fever weeds and grasses of the suburbs and surrounding country.[4]

The true reason is, therefore, that the ease of transportation has enabled thousands to live in the suburbs and surrounding country of all large cities. Most of these localities are sparsely settled, and are surrounded by vacant lots and fields. The latter too frequently are abandoned to ragweed and other hay-fever weeds, even in cases in which a crop has been cultivated at some portion of the year. The air in these places is therefore infested with hay-fever pollens, which find their victims in subjects with low immunity to their protein.

There are a number of places in the United States and Canada in which the meteorological or topographic condition prevents the growth of the plants that cause hay-fever, and which may therefore be termed natural hay-fever resorts. There are several varieties of hay-fever, however, and, accordingly, there are some localities in which one class of hay-fever sufferers find relief but in which others are not benefited. A patient from Illinois, sensitive to the common ragweed (*Ambrosia elatior*) hay-fever only, would find relief in California, where this is not found[5] and a subject in California, sensitive to the sagebrush (*Artemisia*) only, would be relieved in Illinois. This explains the apparent contradiction in regard to many popular hay-fever resorts.

There are some localities, however, in which the natural flora of all hay-fever weeds is extremely low, so that they offer relief to the great majority of hay-fever cases of all forms.[6]

For several years, the American Hay-Fever Prevention Association has been endeavoring to form a reliable list of such localities, so that physicians might

1. Scheppegrell, William: Hay-Fever and Its Prevention, Pub. Health Rep., 1916, **31**, 1907.
2. Flowers of all kinds, whether wild or cultivated, are practically all insect-pollinated, and, as the pollen is not in the air, they do not cause hay-fever, although some may cause a reaction on direct inhalation.
3. Scheppegrell, William: The Prevention of Hay-Fever as a National Problem, Jour. Am. Pub. Health Assn., 1918.
4. Scheppegrell, William: Hay-Fever and Hay-Fever Pollens; Arch. Int. Med., June, 1917, p. 959.
5. Scheppegrell, William: Hay-Fever: Its Cause and Prevention in the Pacific and Rocky Mountain States, Pub. Health Rep., 1917, **32**, 1135.
6. Scheppegrell, William: Hay-Fever and Its Relation to One Hundred of the Most Common Plants, Trees and Grasses, Med. Rec., New York, 1917, **92**, 230.

be able to direct their hay-fever patients to the nearest resort in their vicinity. In this work, we have received valuable assistance from most of the state boards of health, from physicians in general and from our Botanical Department.

This list of hay-fever resorts will be increased as reliable information is obtained. It is published at this time, in order to be available for the approaching fall hay-fever season which is due in August.

### PARTIAL RELIEF

Contrary to the popular belief, altitude is no protection against hay-fever unless this exceeds 6,000 feet. Up to 4,000 feet, the common ragweed (*Ambrosia elatior*) is as common as on the plains. At an altitude over 6,000 feet, however, the ragweed does not thrive, and such localities afford relief to those sensitive to this pollen. Some of the wormwoods (*Artemisia frigida*), however, are found at this altitude, but these are practically confined to the Pacific and Rocky Mountain states.

An island that is kept free of weeds, and has no land nearer than 5 miles, is practically free of hay-fever pollen, and is therefore without hay-fever. Even 1 or 2 miles is ordinarily a sufficient water protection, as the lightest pollen of the hay-fever weeds (ragweeds, 15 microns in diameter) does not traverse more than this distance except in winds of high velocities (20 or more miles an hour).

The apparently erratic benefits of coast resorts is simply a question of wind direction. If this is from the water, the air is free of pollen, and hay-fever subjects find relief. If the wind is from the land, however, and this is infected with hay-fever weeds, which is usually the case, the proximity of the water affords no relief.

### COMPLETE TEMPORARY RELIEF

There are a number of places in the United States and Canada, where, on account of the altitude (over 6,000 feet), latitude or the presence of extensive forests, the common hay-fever weeds are not found, and which are therefore free of hay-fever. The following list of such places has been carefully compiled, and should prove convenient to practitioners in general, who are frequently at a loss as to the nearest hay-fever resort for their patients.

### HAY-FEVER RESORTS IN THE UNITED STATES[7]

Arkansas.—Eureka Springs, Heber Springs, Sylvan Springs and Winslow, all located in the Ozark Range, are reported.

California.—Santa Cruz, Del Monte, Santa Barbara and Coronado along the coast, and Lake Tahoe and other places among the high Sierras are reported.

Colorado.—Silver Plume, and other mountains with an altitude over 7,000 feet, are reported.

Connecticut.—The Litchfield Hills, in the northwestern part of the state, afford relief in a certain class of cases along the coast, and the seaside resorts, especially in the New London district, afford relief to a class of inland cases.

Florida.—The coast of southern Florida affords partial relief.

Louisiana.—Covington and Abita Springs afford relief in the vernal type of hay-fever.

Maine.—Rangeley Lakes and Kineo, located on Moosehead Lake, are reported.

Michigan.—At Mackinac Island in a series of fifty cases, sixteen patients were free of hay-fever, twenty-five were improved, and nine were not benefited.

Minnesota.—Duluth is favorably reported.

Mississippi.—Pass Christian, Bay St. Louis and other coast resorts afford relief in the vernal form of hay-fever.

New Hampshire.—Bethlehem, located in the White Mountains, has long been a favorite resort for hay-fever sufferers; Bretton Woods, Jefferson, Fabyans and Dixville Notch are other resorts.

New Mexico.—Cloudcroft, Whitcom Springs, Albuquerque, Valley Ranche, Glorietta, Jemez Springs, Sulphur Springs, El Porvenir and East Las Vegas are reported.

New York.—The Adirondacks (highest point 5,379 feet), Fire Island, an insular strip of land south of Long Island, Thousand Islands Park, Big Moose and Old Forge Lake are reported.

North Carolina.—Eagle's Nest, altitude 5,050 feet; Glen Ayre, Blackstock Knob, 6,378 feet; Black Dome, 6,502 feet; Mount Gibbs, 6,591 feet; Hall Back, 6,403 feet, and Mount Mitchell, 6,711 feet, in the Black Mountains; Double Spring, 6,380 feet; Richland Balsam, 6,370 feet, and Jones' Knob, 6,224 feet, in the Balsam Range, and Mount Buckley, 6,599 feet; Clingman's Drive, 6,660 feet; Mount Love, 6,443 feet, and Alexander, 6,447 feet, in the Smoky Mountains, are reported.

Pennsylvania.—Eaglesmere, the Pocono Mountains, the hills in the vicinity of Bradford, and the mountains near Mont Alto and Caledonia are reported.

South Dakota.—Hot Springs is reported.

Tennessee.—Roan Mountain, altitude 6,310 feet, has long been noted for its relief to hay-fever sufferers.

Texas.—San Antonio is reported as having but few hay-fever cases.

Utah.—There are a number of places in various parts of this state having an altitude of over 6,000 feet which afford relief to hay-fever subjects; also several canyon resorts, such as Brighton and Ogden, where comparative immunity exists. Many persons from Salt Lake City, which has an elevation of 4,300 feet, visit these places with relief.

Vermont.—The Green Mountains (highest point 4,430 feet) afford relief.

Washington.—Although there is the usual percentage of hay-fever east of the Cascade Mountain Range, there is practically none in any part of the state west of this range, which is therefore favorable to hay-fever subjects.

West Virginia.—Terra Alta, Marlinton and Webster Springs are favorably reported, although their altitude (2,500 feet) is not sufficient for marked benefit.

Wisconsin.—Two Rivers, located on a peninsula extending seven miles into Lake Micihgan, is favorably reported.

### CANADIAN HAY-FEVER RESORTS

Province of Alberta.—This province is remarkably free of hay-fever, many persons from the United States and eastern Canada obtaining marked relief.

Province of Ontario.—The Muskoka Lake region and the National Park, known as Algonquin Park, abounding in lakes and densely wooded, have a low percentage of atmospheric pollen. Campobello, in the Bay of Fundy, and Prince Edward Island, in the Gulf of St. Lawrence, are favorably reported.

The ragweeds and other members of the *Ambrosia* family[8] are not found in Europe, so that it offers immunity to our common fall hay-fever. The grasses (*Gramineae*), however, are common, so that the vernal type of hay-fever is fairly prevalent in many sections.

7. In addition to our own sources of information, a letter was sent to the state board of health, and at least two rhinologists of each state. If no report, or a negative one, was received, the name of the state is omitted.

8. Scheppegrell, William: The Classification of Hay-Fever Pollens from a Biological Standpoint, Boston Med. and Surg. Jour., 1917, **177**, 42.

**The War in Winnipeg.**—An advanced guard of the first army corps of house flies has already occupied several stables and other outposts of the city, and it is reported that an immense army of several millions will follow immediately unless prompt measures are taken, not only to repel the invaders, but to exterminate them utterly.—Winnipeg *Health Bulletin.*

# NEUROCIRCULATORY ASTHENIA *

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A condition known as "soldier's heart" was recognized during the Civil War and described by DaCosta. At the beginning of the present war, Thomas Lewis gave the name of "effort syndrome" to the condition and later published an elaborate description. More recently a better name has been adopted—neurocirculatory asthenia. Work produces the syndrome in exaggerated form, but all of the phenomena are present in varying degrees after it declares itself with sufficient force to limit the soldier's usefulness. The condition is quite clearly a vasomotor disturbance occurring in nervous, highly strung persons. The heart, per se, is rarely affected except in rate. Patients with true organic heart disease rarely present this syndrome, and when found are immediately discharged to civil life. A heart lesion may be a comparatively harmless condition in a civilian, but in the stress of army life it becomes a menace, and experience has shown that it is useless for the soldier to continue.

Briefly, the syndrome of symptoms is breathlessness on exertion, tachycardia, palpitation, precordial pain, vertigo, headache, easy fatigue, lassitude, high systolic blood pressure and general nervous instability. All of these symptoms are exaggerated by a slight amount of exercise. Not all patients have a complete syndrome, but the chief complaint is precordial pain. Thrills are common, and their presence led us at the outset to think, in some cases, that we were dealing with mitral stenosis, but the thrill is generally systolic in time, and the other phenomena of stenosis are absent.

The cases are of importance to the military surgeon because of their frequency, and because of the real disability under which the patients suffer. The results of observation here show that the case should be discovered as early as possible. Some patients clearly show the signs of neurocirculatory asthenia at the time they are recruited, and others only after a period of intensive training; but practically all give a past history of the syndrome. We can all recall cases in civil practice. That they are often unrecognized is shown by the fact that only two patients of our series were sent to the hospital with the correct diagnosis. The most frequent diagnoses were heart trouble, tachycardia, myocarditis, some form of valvular defect and pulmonary tuberculosis.

The most important consideration for us as military surgeons is the early diagnosis, treatment and ultimate disposition of these cases. In the United States Army until very recently there has been no category of light duty, so that unless a man was fit for full duty he had to be discharged. As a result, more of our patients have been discharged from the Army than would have been necessary. Under the new regulation providing for "domestic service only," some of those who have been discharged might have been retained for light duty.

## TREATMENT

Lewis[1] treats his patients with graduated calisthenic exercises. Patients gradually progress from one class of exercises to the next; and when finally, after a period of about six weeks, they are able to perform the most difficult exercises without distress, they are returned to duty. Those patients who are unable to complete the series of exercises are discharged from the Army. Thus the exercises serve both as diagnostic and as therapeutic measures.

This report is based on a study of eighty-nine cases out of a total of 200 at the base hospital, Camp McClellan, Ala.

In the British army the term "constitutional" is used to designate those patients whose history from youth has given evidence of being not quite up to the average. In our study we have used the term "constitutional" to indicate the foregoing class of patients, and "nonconstitutional" for those whose neurocirculatory asthenia has apparently resulted from some acute infectious disease or has been induced by it.

The majority of our cases have been in the "constitutional" class.

In the treatment of all of our patients Lewis' instructions have been followed carefully, and much the same exercises that he describes have been used. The exercises have yielded valuable information as to the degree of disability, but as a therapeutic measure they have been a failure. None of the patients, not even those returned to duty, showed improvement objectively or subjectively. A few gained in weight and strength, but their cardiovascular symptoms remained unchanged. Of Lewis' patients, 41 per cent. were returned to duty, half of these to full duty, and half to light duty. Of our eighty-nine cases, twelve, or 13.5 per cent., were returned to full duty. One of these returned to the hospital one week later because he could not stand the work, and was then discharged. This leaves 12.3 per cent. of the patients on full duty. Four patients, or 4.5 per cent., were returned to light duty.

Thus 16.8 per cent. of the soldiers treated were returned to duty of some sort. Counting the man who was discharged after being on duty for one week, seventy-four, or 83.2 per cent., were discharged from the Army.

The point, however, that should be emphasized is that the exercises brought about no improvement in the patients whose condition was constitutional. Those men who were returned to full duty showed the same degree of dyspnea, tachycardia, high blood pressure, vertigo, etc., at the time of their discharge that they had on their admission to the hospital. They simply had milder cases. They would probably have stood the heaviest exercise at once, without first undergoing the lighter grades of exercise. In other words, if we had used the exercises as diagnostic means alone, not as a therapeutic measure, we should have discovered at once that these patients presented symptoms only on rather severe exercise, and much time and expense to the government would have been saved.

* Read before the Section on Practice of Medicine at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

1. Lewis, Thomas: Report on Neuro-Circulatory Asthenia, and Its Management, Mil. Surgeon, 1918, **42**, 409.

### FUNDAMENTAL NERVOUS INSTABILITY

We have become convinced that neurocirculatory asthenia is due to a fundamental nervous instability of the patient that cannot be cured. There is a slight waxing and waning of the symptoms, varying with the general condition of well-being of the patient, but a real cure is impossible. Lewis warns against the diagnosis of neurasthenia in these soldiers, for he says that it prejudices the mind against a possible cure, and renders the treatment less effective as a consequence. When we first began to study these cases they were new to us, and we were guided in their study and treatment exclusively by Lewis' report. At first we, too, discounted the mental and nervous symptoms; but eight months' experience in the handling of these cases has changed our views. The reasons for this will now be enumerated.

The vast majority of the patients give a family history of nervous disorder. The father or mother or some of the brothers and sisters are nervous and irritable, and are easily upset. The patient himself, when carefully questioned, will reveal symptoms dating back to childhood. He, too, has always been nervous and excitable. Small things unnerve him so that he trembles and feels faint. In crises or emergencies, whether it be in games such as baseball or in the line of his work, he cannot stand the strain and quits. He has no stamina. A number of the patients have had enuresis in childhood. Objectively they usually present a number of signs of nervous instability. These become particularly evident after the exercises. There is twitching of the fingers, often a coarse general tremor, and emotional instability sometimes manifested by crying. Two illustrative instances of emotional instability may be mentioned:

A sergeant, a man with mild symptoms who wanted to return to duty, was asked one day by the commanding general, who was on a tour of inspection, how he was getting on. This question from so distinguished a source so unnerved the man that all of his symptoms became acute that day, and he could hardly go through an exercise that the day before had given him little trouble.

Another man had disobeyed a direct order and had received a severe reprimand as a consequence, and was confined in a room by himself for two days. From that time on, all of his symptoms were much worse; the slightest exercise evoked a coarse general tremor, and the patient was weaker than he had ever been before.

Although all of the patients were treated with disregard of their neurotic symptoms, those in whom these symptoms were more marked were seen in consultation by the psychiatrist. Thirteen of these were discharged by the neuropsychiatric board, six under the diagnosis of constitutional psychopathic state; two, of constitutional mental inferiority, and five, of psychoneurosis. However, in most of the cases the mental symptoms were insufficient to warrant any action by the neuropsychiatric board. Major Harlow Brooks at Camp Upton noted the neurotic element in these patients as well as in their families.

### ASSOCIATION OF CARDIOVASCULAR AND NERVOUS SYMPTOMS

The cardiovascular and nervous symptoms go hand in hand. Those patients with marked neurotic symptoms represent the severe cases of neurocirculatory asthenia. Lewis reports patients with respirations varying from 60 to 100 a minute. We have seen several patients with respirations from 60 to 70 a minute after exercises. These patients were all distinct psychopaths. Moreover, the dyspnea was not real, for if a patient breathing 60 a minute were asked a question he would reply without showing any signs of distress, using long sentences without drawing a breath. In agreement with Lewis we have found that the symptoms often date from an acute infection, and we have observed a number of patients who were made worse by an intercurrent infectious disease. Careful questioning usually will elicit the information that even before the infection some of the symptoms were present, and that the acute insult was only the exciting factor. Similarly in the cases of those patients who date their symptoms from the intensive training at camp, a significant previous history may usually be obtained. Patients, who at first stated that their symptoms were of only a few months' duration, on careful questioning gave histories of a mild form of the disorder many years back. Lewis found that 43 per cent. of his patients had symptoms before joining the service. Our patients may be justly compared only to those of his who developed symptoms before their entry into active service. Of these, only 36 per cent. were returned to duty, and only 10 per cent. of them to full duty. Thus, in the class of cases the ineffectiveness of treatment is shown in both of our series.

Neurocirculatory asthenia as seen in our training camps occurs in persons with fundamentally unstable nervous system, with resultant instability of the vasomotor system. They do not improve under treatment and should be discharged from the Army at once. With the category of light duty introduced in our Army, the exercises will be of value in grading the men as to the degree of work that they can perform.

Lian[2] has reported on 350 soldiers with disordered action of the heart. He states that the treatment in the chronic cases can be only palliative, and that those who were returned to duty were returned only to light duty.

Major Harlow Brooks[3] has reported briefly on cases of neurocirculatory asthenia at Camp Upton. He too notes marked emotional instability and neurovascular instability, as well as a family history of nervous disorders. He ascribes the condition to hyperthyroidism, and has noted definite thyroid enlargement or prominence in at least two thirds of his patients. Fifty per cent. of his cases occurred in Jews. Thyroid enlargement has been noted in very few of our cases. While many of the symptoms of neurocirculatory asthenia correspond to those of exophthalmic goiter, the general impression that one gets of each case does not justify this diagnosis. Exophthalmos is rare, and when present is very slight. It would be expected that in a large series of patients showing marked cardiovascular disturbance, at least a few would have a distinct goiter or exophthalmos if they had exophthalmic goiter. Moreover, the tremor in these patients is usually much coarser than that found in exophthalmic goiter. Dr. Leszynsky[4] says that in his opinion emotional strain, rather than a disturbance in thyroid secretion, is responsible for the symptoms. This is much nearer the truth. Lewis found only two cases of exophthalmic goiter in a series of 1,000 cases. Only

2. Lian, G.: Presse Medicale, 1918, **26**, 11.
3. Brooks, Harlow: Hyperthyroidism in the Recruit, abstr., The Journal A. M. A., March 9, 1918, p. 728.
4. Leszynsky, W. M., in discussion on Brooks, Harlow: Hyperthyroidism in the Recruit, The Journal A. M. A., March 9, 1918, p. 730.

4 per cent. of his patients had palpable enlargement of the thyroid. Two and two-tenths per cent. of our series were Jews; 3.4 per cent. were Italians and the rest Anglo-Saxons, mostly native Americans for several generations.

The patients with neurocirculatory asthenia bear a great resemblance to patients with orthostatic albuminuria. There is the same vasomotor and nervous instability. Orthodiagrams show that there is no diminution in heart size after exercise. This condition, too, is found with orthostatic albuminuria. Routine urinalyses of our patients reveal at the most an occasional very faint trace of albumin. In a series of twenty-seven patients, the urine passed before and after exercise was tested for albumin. Six of these cases showed a trace of albumin before the exercise, which in four cases was distinctly increased in amount by the exercise. Two urines showed a trace of albumin before the exercise, and none afterward. In no case did an early morning specimen collected on arising show albumin.

### THE BLOOD PRESSURE

Blood pressure studies have proved very interesting. When the patient is up and about, the systolic blood pressure is high, usually between 135 and 170. The diastolic pressure is generally normal. After exercise the systolic pressure rises greatly, and not infrequently the diastolic pressure drops. A few examples are cited in Table 1. A frequent feature is the persistence and loudness of the fourth sound heard with the stethoscope when taking the blood pressure. Frequently a loud fourth sound can be heard down to the zero mark. This makes the estimation of the diastolic pressure difficult at times.

TABLE 1.—BLOOD PRESSURE

| Case | Blood Pressure after Rest | | Blood Pressure after 100 Hops | |
|---|---|---|---|---|
| | Systolic | Diastolic | Systolic | Diastolic |
| 10 | 155 | 90 | 175 | 70 |
| 16 | 135 | 65 | 165 | 0 |
| 17 | 145 | 65 | 185 | 0 |
| 43 | 150 | 90 | 170 | 78 |
| 44 | 140 | 85 | 154 | 0 |
| 45 | 140 | 80 | 184 | 0 |
| 61 | 154 | 100 | 165 | 70 |
| 62 | 120 | 80 | 138 | 60 |

Barringer[5] has studied the heart's functional capacity by means of blood pressure readings taken thirty, sixty and ninety seconds after a measured exercise. He has found that when the exercise overtaxes the reserve power of the heart, there is a delay in rise in the systolic blood pressure after the exercise. He expresses the belief[6] that patients with effort syndrome have a decreased cardiac reserve power. Experiments according to his methods were undertaken to study this point. Protocols of our findings are given in Tables 2, 3 and 4. All three patients showed marked dyspnea on the completion of these exercises. Yet the reserve power of the heart as measured by the number of foot-pounds of work that a patient can do before showing a delayed rise in blood pressure is practically normal. Barringer found that between the ages of 20 and 30 the reserve power of the heart measured by this method is about 5,600 foot-pounds in sixty seconds. These experiments show that the symptoms are not due to cardiac weakness, and that the exercises usually used to strengthen a weak heart are unnecessary in these cases.

5. Barringer, T. B., Jr.: The Circulatory Reaction to Graduated Work as a Test of the Heart's Functional Capacity, Arch. Int. Med., March, 1918, p. 363; Studies of the Heart's Functional Capacity, ibid., 1917, p. 829.

6. Barringer, T. B., Jr.: The Reserve Power of the Heart, Brit. Med. Jour., Dec. 15, 1917.

### THE PULSE

The behavior of the pulse after exercise is worthy of note. In all of our cases the pulse rate has been taken every day, before the exercise, immediately afterward, and two and four minutes afterward. Usually the pulse rate is accelerated out of all proportion to the exercise, and does not drop to normal in four, or even in ten minutes. However, at times the pulse slows after exercise, or it may first slow and then become rapid. Examples are given in Table 5. Just what the significance of the variable reaction of the pulse rate is, it is difficult to say. In these patients emotion speeds the heart just as much as exercise. It is probable that this factor causes the variability in pulse rate. Thus a man becomes excited before the exercise. He calms down later, and so, in spite of the exercise, his pulse rate is slower than it was before the exercises.

In a series of 100 patients, Lewis found 48 per cent. showing precordial hyperalgesia. Of eighty-five

TABLE 2.—BLOOD PRESSURE IN CASE 1

| | Systolic Blood Pressure |
|---|---|
| 1,200 foot-pounds in 13 seconds: | |
| Before work | 166 |
| 30 seconds after work | 180 |
| 60 seconds after work | 178 |
| 90 seconds after work | 164 |
| 6,000 foot-pounds in 60 seconds: | |
| Before work | 160 |
| 30 seconds after work | 182 |
| 60 seconds after work | 182 |
| 90 seconds after work | 176 |
| 120 seconds after work | 170 |
| 6,480 foot-pounds in 65 seconds: | |
| Before work | 146 |
| 30 seconds after work | 185 |
| 60 seconds after work | 194* |
| 90 seconds after work | 180 |
| 120 seconds after work | 174 |

*Delay in rise.

TABLE 3.—BLOOD PRESSURE IN CASE 2

| | Systolic Blood Pressure |
|---|---|
| 1,025 foot-ponds in 20 seconds: | |
| Before work | 138 |
| 30 seconds after work | 153 |
| 60 seconds after work | 146 |
| 90 seconds after work | 136 |
| 2,460 foot-pounds in 30 seconds: | |
| Before work | 142 |
| 30 seconds after work | 158 |
| 60 seconds after work | 152 |
| 90 seconds after work | 142 |
| 4,100 foot-pounds in 50 seconds: | |
| Before work | 142 |
| 30 seconds after work | 165 |
| 60 seconds after work | 166 |
| 90 seconds after work | 160 |
| 120 seconds after work | 148 |
| 5,125 foot-pounds in 65 seconds: | |
| Before work | 125 |
| 30 seconds after work | 158 |
| 60 seconds after work | 168* |
| 90 seconds after work | 160 |
| 120 seconds after work | 152 |

*Delay in rise.

TABLE 4.—BLOOD PRESSURE IN CASE 3

| | Systolic Blood Pressure |
|---|---|
| 400 foot-pounds in 30 seconds: | |
| Before work | 150 |
| 30 seconds after work | 174 |
| 60 seconds after work | 168 |
| 90 seconds after work | 166 |
| 120 seconds after work | 162 |
| 2,675 foot-pounds in 45 seconds: | |
| Before work | 150 |
| 30 seconds after work | 150 |
| 60 seconds after work | 150 |
| 90 seconds after work | 150 |
| 120 seconds after work | 148 |
| 5,340 foot-pounds in 85 seconds: | |
| Before work | 146 |
| 30 seconds after work | 168 |
| 60 seconds after work | 160 |
| 90 seconds after work | 154 |
| 120 seconds after work | 150 |

patients whom we tested, thirty-nine, or 45.8 per cent., had hyperalgesia, thirty-four, or 40 per cent., had no precordial sensory disturbance, and twelve, or 14.2 per cent., had hypalgesia. The degree of hyperalgesia in general corresponded to the degree of pain of which the patient complained. This relationship, however, was not constant. Two patients in whom precordial pain was a continual complaint had no precordial sensory change, and four patients with severe precordial pain had precordial hypalgesia. Eight patients complaining of moderate precordial pain also showed hyperalgesia. Three patients who had no precordial pain had hyperalgesia. Thus the precordial pain and precordial hyperesthesia are not always concomitant.[7]

TABLE 5.—PULSE RATE BEFORE AND AFTER EXERCISE

| Case | Exercise | Before | Immediately Afterward | Two Minutes Afterward | Four Minutes Afterward |
|---|---|---|---|---|---|
| 2 ..... | A 15 | 104 | 108 | 116 | 112 |
| | A 15 | 112 | 92 | 92 | 92 |
| | A 15 | 96 | 112 | 100 | 116 |
| | B 15 | 136 | 120 | 104 | 88 |
| 4 ..... | A 15 | 144 | 72 | 88 | 92 |
| | A 15 | 96 | 132 | 120 | 132 |
| | C 15 | 84 | 92 | 128 | 92 |
| | C 15 | 132 | 128 | 96 | 104 |
| | C 15 | 116 | 120 | 124 | 76 |
| 5 ..... | A 15 | 80 | 144 | 144 | 132 |
| | A 15 | 136 | 132 | 132 | 112 |
| | B 15 | 92 | 120 | 112 | 104 |
| | B 15 | 112 | 120 | 128 | 104 |
| | C 15 | 136 | 124 | 112 | 120 |
| 25 ..... | A 15 | 96 | 80 | 76 | 72 |
| | A 15 | 100 | 100 | 112 | 108 |
| | BC30 | 132 | 116 | 92 | 88 |
| | C 30 | 92 | 132 | 92 | 96 |
| 33 ..... | A 15 | 124 | 96 | 96 | 96 |
| | A 15 | 128 | 104 | 120 | 120 |
| | B 15 | 96 | 136 | 112 | 120 |
| | D 30 | 94 | 120 | 108 | 120 |
| | D c30 | 112 | 88 | 104 | 108 |

## CONCLUSIONS

1. The name recently adopted by Thomas Lewis and his co-workers for this clinical picture, neurocirculatory asthenia, is an improvement on the old one.

2. The condition exists in civil life, and most patients give a history of attacks before enlistment.

3. Family history is an important factor.

4. Early recognition is very important. Much time and expense are wasted by delay in diagnosis.

5. Recruiting officers and regimental surgeons should be familiar with the syndrome.

6. Some cases become evident immediately, others after a few weeks of intensive training.

7. Exercises have not improved the patient's condition in constitutional cases. Recently the exercises have been used more for diagnosis than for treatment.

## ABSTRACT OF DISCUSSION

Dr. Louis M. Warfield, Milwaukee: I have been particularly interested in this question of effort syndrome or neurocirculatory asthenia, or whatever one chooses to call it. I am examining for the cardiovascular board in the camp at Jefferson Barracks. About 50,000 men passed through the camp since I have been there, and I have examined all the referred heart cases besides about 20,000 men in routine work. The problem has been how it is possible to determine these cases at that stage. The exercises that one can give these men must necessarily be brief, and one can pick out only the cases where there is really some fairly gross condition bringing about the inability of the individual heart to carry on these minor exercises. The exercise is to hop 100 times on the toes of the left foot. That is quite sufficient to determine at once the capability of some men for military service. It has been my experience in examining these cases that a number of men with mitral regurgitant murmurs who have responded to this exercise even better than I could respond to it. I do not believe that these men are unfit for general military service, and I cannot see that a systolic murmur itself, especially in a man who has had no rheumatism or where infection has been trivial, should unfit him for military service. Major Robey, is there any way that we can determine at the recruit depots whether these men are going to break down or not? Undoubtedly a number of men have hearts which respond in a normal way to the exercises who will probably break down under strain. We cannot look inside the body to determine the muscular energy of the heart, nor can we determine how much the heart is going to stand under a certain strain; yet it is a distinctly important subject, not only for the man himself but from the standpoint of expense to the government, to take these men into training and then return them back into civil life after a while. I recall only one man with neurocirculatory asthenia or effort syndrome. I have seen a number of men who I thought were hyperthyroidism cases. Other cases have been termed psychoneuroses by the psychiatrists, and there were some cases which after careful examination we were able to determine were cases of pulmonary tuberculosis. Those cases we can detect, but it is the great group of cases of trivial heart murmurs and the cases that do not seem to give very much information of what is going to happen to them eventually on which we want to have some information, so that we need not subject them to military training and to some future condition which will be inimical to them.

Sir James Mackenzie, London, England: When the war broke out men were shocked to find that they had heart disease and were rejected from the army. I drew up a short account for the war office, calling attention to how you could recognize murmurs that were of significance and murmurs that could be ignored. A perfectly sound heart can give murmurs. If the heart is not otherwise impaired; if it is normal in size, normal in rate, and the response to effort is good, ignore the murmur—it makes no difference where you hear it. That dictum was adopted and sent to all the recruiting stations in England. The effect lasted for about three months, then it was forgotten. New instructions were issued and they were back to the old things of mitral regurgitation of first, second and third degrees. I remember a man in Manchester told me that no man dies with mitral regurgitation; the mere fact that a systolic murmur is present does not matter. What is it due to? If you cannot tell what it is due to, why give it a name? We had a number of boys rejected. One lad was rejected six times, and it was only because of my certificate that he went into the army. He had a rough systolic at the apex. He has been through the very hardest time, and he was as fit the last time I saw him as he was on the day he entered the army, so that the seriousness of systolic murmurs should never be considered. Never base a grave prognosis on only one sign. Take an irregular heart; if that is the only sign, ignore it. If there is only a murmur, ignore it, but examine the muscle. A failing muscle always shows.

The hyperthyroidism cases also rose in England and spread. I submitted 300 cases to careful examination; the symptoms were almost identical. Some times there was irritability of the heart; sometimes there were tremors, and in only one case could I say that there was an enlargement of the thyroid or a suspicion of protrusion of the eye. But they say, "Here is this hyperthyroid," and I say, "There is the coccygeal gland, it might be due to that."

In regard to tobacco: Some of the men had gotten into the habit of chewing guncotton to quicken the heart, but when we analyze all cases we find that the excessive use of tobacco, in addition to exertion, will cause all sorts of symptoms. Tobacco is one agent; it is not the whole story, though it may be a predisposing cause.

In regard to psychic conditions: There is one type of man who has the "X" disease; and the reason I call it the "X" disease is because I do not know what it is. Other people

7. In addition to the references already given, the following will be found of interest:
Reports on Soldiers Returned as Cases of "Disordered Action of the Heart," or "Valvular Disease of the Heart," Medical Research Committee, Special Report Series No. 8, London.
Heart, **6**, No. 4.

describe it under different names, as congenital something or other. The type is as follows: The man is, as a rule, poorly nourished and often has not much muscular development. He has those cold extremities, almost like Raynaud's disease, and sometimes they become flushed, but he does not enjoy a cold bath; that is, the response to cold is excessive, like the syndrome effort. These people generally have a red nose in cold weather, and their temper is irritable. They very often have an irritable heart, and when put into the army they break down. They also exhibit a number of mental peculiarities—melancholia and digestive disturbances, such as gastric ulcer, and what my colleague, Arbuthnot Lane, calls ileostasis, a form of intoxication. I do not know whether he is right, but I have traced that condition down to the intestines. These people have been treated everywhere, but if you look at them, as a rule, a good general practitioner can tell that there is a change in a man's condition. You look at the man and you will conclude that there must be some nutritional defect; that the man is poorly nourished; his heart is poorly nourished; and a large number of my cases consult me on account of that.

In England we have a class termed conscientious objectors. One of them came to me. I took him to a mirror and said, "Don't you think that is not a well nourished face?" He said, "Yes." "And what is the condition of your heart?" "It is half starved." Then I said, "If your heart is half starved, your brain is half starved."

DR. J. N. HALL, Denver: I wish to ask regarding the diagnosis of exophthalmic goiter in the soldiers who come from the Great Lakes district, where goiter is common. The symptoms as put down in our report were choking, dyspnea, lack of endurance, tachycardia, palpitation, exophthalmos in many cases, rapid exhaustion on exercise, general exhaustion, tremor of fingers. Nearly all showed distinct thyroid enlargement—some to a marked degree. Some gave a history of neuroses, and in nearly half the cases goiter existed in the family. Cardiac reserve was poor. I would like to know how those cases are to be classified.

MAJOR B. S. OPPENHEIMER, New York: Late last summer the Surgeon-General sent six American medical officers of the Reserve Corps to the English Military Heart Hospital, with which Sir James Mackenzie has been connected since its inception. After serving there for several months, they wrote an independent report in which they suggested the new name, neurocirculatory asthenia, for a now familiar symptom complex. After the completion of this report Dr. Thomas Lewis wrote a brief but valuable foreword, showing its military bearing to the young American forces. By some mistake, however, the paper was printed in the April issue of the *Military Surgeon* with Dr. Lewis as the author; the names of six American officers really responsible for the report, and also for the introduction of the name (N. C. A.), were entirely omitted. This explanation may make certain parts of that paper more intelligible. Several other names have been used, such as "disordered action of the heart," "irritable heart of soldiers," "effort syndrome," "athlete's heart," "cardiac neurosis," etc., but the use of any term which directs the soldier's attention to his heart handicaps him and the officer who deals with him. Neurocirculatory asthenia overcomes that objection; moreover, the name is not meant to imply any theory of the fundamental pathology, which is still unknown. It is purely a descriptive term, indicating that in this syndrome there are nervous and circulatory symptoms associated with an increased susceptibility to fatigue.

Since returning to America there has been an opportunity to compare the cases among American recruits who have broken down in training with such symptoms as the British soldiers who were invalided from the front with "D. A. H." The condition as seen in England and America is identical, but the cases here are milder, and, as Major Robey and Captain Boas point out, belong almost entirely to the constitutional group; i. e., to the group that had symptoms prior to entrance into service. The question of fundamental pathology, especially that of hyperthyroidisms, is here complicated by the great prevalence of thyroid enlargement in the "thyroid belt" of the Great Lakes. Some of these men have a simple thyroid enlargement; some suffer from thyreotoxic hearts, but it is exceptional to find a typical case of Basedow's disease. As to the question of nervous instability which Major Robey has emphasized, Captain Rothschild and I took in detail the family and the personal histories of one hundred soldiers in Colchester, and found that 46 per cent. had predisposing neuropsychic factors in their family and previous histories, but that 39 had absolutely negative histories and had given valuable military service before breaking down. Only a certain percentage of cases can be picked out in the initial examination of drafted men, for the disorder may not develop until the soldier is exposed to the conditions of modern warfare. In view of the abundance of perfectly normal recruits in this country, every man who is sent overseas should be fit; and, for the present at least, it is sound to reject doubtful or borderline cases.

DR. ABRAHAM JACOBI, New York: When a mitral murmur exists and you want to be sure, or fairly sure, that you have to deal with an organic disease, you must expect one thing at least, dilatation or hypertrophy, or both. Unless you find that, you are not dealing with organic disease. Then there are other murmurs which you may find one day and not the next, or you may find them after exertion only and not connected with dilatation or hypertrophy. They are functional, not organic. These cases are not infrequently set down as "myocarditis." They are not cases of myocarditis. They are simply cases of a certain amount of muscular weakness of the heart, fatty heart, nervous heart, tobacco heart. I have seen a great many cases among men or women, mostly men, who complain of the heart. There are very few symptoms about the heart, that is true. The only thing I make these patients do is to run about the room or run upstairs and down again, and if a murmur is present, allow the patient to rest ten minutes, and the murmur is gone. We see such cases very frequently, and a number of those men are quite fit to do moderate work. These are the cases that are often diagnosed as mitral incompetency, which they are not. I expect a mitral incompetency only when there is some hypertrophy or dilatation or both.

DR. WILLIAM H. ROBEY, Boston: There is no surprise because examiners are sometimes puzzled about findings in heart cases. They hear abnormalities, or what appear to be abnormalities, and may easily be in doubt as to correct classification. The examination must necessarily be brief. The War Department has sent out a large number of cardiac examiners provided with a set of rules which have been followed with considerable care, since in 26,000 soldiers at Camp McClellan we have found very few cases of organic heart disease. We have discovered some cases of organic valvular disease, but none of muscular insufficiency. Can the heart do its work? If you think you can answer that question, the recruit should be given a trial, leaving a more thorough study to the cardiac experts at the various camps. Sir James Mackenzie has called attention to the importance of not condemning a heart on a murmur alone.

Major Oppenheimer has very truly said that we do not care very much what name you give to the syndrome described in my paper. The chief point is that the condition exists, must be recognized and dealt with. Captain Warfield has asked a very pertinent question. How can you tell when a man is recruited whether he has neurocirculatory asthenia or not? It is a difficult problem and cannot always be answered at once. If the man has tremor, rapid heart and cyanosed hands, with a history, then it is quite clear that he comes within this group and should not be accepted. Then there is the other class, even among the constitutional cases, which does not show symptoms until there is the strain of camp or battle. No one can discover these cases until they are put to the test. The point we want to emphasize is that the syndrome called neurocirculatory asthenia is a real condition and must be recognized as early as possible for the good of the service.

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**Reduce the Protein Intake.**—Chittenden has shown that when the protein intake is reduced by one half or less of that which the American appetite suggests, professional men, soldiers and athletes may be maintained in the best physical condition.—Lusk, Food in War Time.

# IMPREGNATION OF THE UNDERWEAR AS A MEANS OF CONTROLLING THE CLOTHES LOUSE*

WILLIAM MOORE
ST. PAUL

The data obtained in the experiments made to determine the possibility of impregnating the underwear with some substance that would destroy the clothes louse fall into four distinct divisions: (1) impregnation with oil; (2) impregnation with oils carrying certain toxic substances; (3) impregnation with the toxic substances without the oil, and (4) impregnation with nonorganic chemicals.

Since there seems to be a general understanding that oily underwear is unfavorable for the development of the clothes louse, it was first determined to study a number of different oils. From the examination of the results, it was apparent that in the use of mineral oils, at the rate of 1 c.c. to 4 square inches of a medium-weight piece of underwear, the oil would destroy the lice in a mechanical manner. With a higher rate of oil than 1 c.c. to 4 square inches, this was more apparent until one reached 1 c.c. to 1 square inch, the point of saturation for the underwear.

A number of mineral oils were used in this manner, such as lubricating oils, petrolatum, paraffin, chlorcosane, and crude oils from Pennsylvania, Kansas and Oklahoma. On reduction of the amount of oil present to about 1 c.c. to 8 square inches, a point at which the garment was just visibly oily, the killing quality of the oil disappeared to a great extent. In using lard, fish oil and "bone oil," the results were no better than in the use of mineral oil, and the same may be said to be true of the vegetable oils, cottonseed oil, olive oil, peanut oil, rape-seed oil and palm oil. It was noticed, however, that, in the vegetable and animal oils, if the oil was rancid or became rancid during the period of the experiments, its killing qualities were, in general, increased. The presence of oil equal to 1 c.c. to 4 square inches slightly retarded egg-laying; at the rate of 1 c.c. to 8 square inches, egg-laying was not retarded; nor was the hatching of the eggs interfered with.

In the second phase of the work, in which certain toxic chemicals were introduced into the oil, a large series of experiments was conducted.

Among the organic acids, salicylic, oleic, valeric, and cinnamic acids were used. Valeric acid was the only one giving good results; but, owing to its volatility, it soon disappeared.

Among the iodin derivatives used were iodoform, phenyl iodid and thymol iodid. Iodoform was very good while phenyl iodid, although killing at first, lost these properties within twenty-four hours. Surprisingly, thymol iodid failed to kill.

Several alkaloids and similar compounds were used, such as cinchonin, morphin, strychnin and urea. These were uniformly of little value, owing possibly to their insolubility in the oils used.

Crude anthracene was effective and retained its effectiveness for as long as 118 hours. Possibly some chemical, such as diphenyl, carbazol or arcidin, present as an impurity in crude anthracene, was responsible for the killing of the lice, since neither commercially pure nor chemically pure anthracene killed.

Diphenyl destroyed the lice within twenty-four hours and retained its killing qualities for as long as 280 hours. A 10 per cent. solution of naphthalene in lubricating oil resulted in the destruction of 100 per cent. of the lice in twelve hours, but such underwear twenty-four hours later failed to kill the lice. Alpha-naphthylamine was just as effective and still killed 100 per cent. of the lice within twenty-four hours, after the underwear was 720 hours old. Sulphonated naphthalene, tetrachlornaphthalene (addition compound) ordinary chlorinated naphthalene and dichlorinated naphthalene were all more or less ineffective. In a study of betanaphthol and alphanaphthol, the former was but slightly toxic, while the latter killed slowly and its killing qualities lasted for as long as 360 hours.

The nitro compounds tried were paranitrophenol, which failed to kill, and orthonitranilin, which was effective for as long as 480 hours.

Among the sweet-smelling aromatic compounds, coumarin was fairly toxic; vanillin failed to kill, while heliotropin, or piperonal, proved to be the most effective compound tried, killing 100 per cent. of the lice within twelve hours, even after a period of 528 hours had elapsed.

The phenol compounds, creosote and tricresol, were effective, while guaiacol carbonate and phenyl salicylate were nontoxic, the latter even at a concentration of 25 per cent. Tribromphenol was toxic to the lice, but would not last longer than 192 hours.

Summarizing the data, it appears that the chemical to have lasting qualities must not be less volatile than a compound boiling at from 300 to 350 C., while the most toxic compounds are those with boiling points of 265 C. or lower. Our most favorable compound—heliotropin, often known under the name of piperonal—has a boiling point of 263 C.

The second phase of the work was planned with the object of determining whether or not these organic compounds retained their toxicity when no oil was present. Heliotropin, o-nitranilin, benzidin, resorcinol and betanaphthol were tested. The data show no reduction in toxicity, while some of the compounds killed even better without the oil, no doubt owing to larger quantities being used than was possible when the chemical was dissolved in the oil.

A number of inorganic compounds were tested for comparison with the organic compounds. Oil solutions of copper oleate, zinc stearate and sulphur were tried with negative results. Copper sulphate, zinc chlorid, ferrous sulphate, sodium arsenite, sodium hydroxid and silver nitrate were all used at 2 per cent. aqueous solutions, but were ineffective. Similar results were obtained in experiments with a saturated aqueous solution of lead acetate; but a saturated aqueous solution of mercuric chlorid killed within twelve hours. Of the inorganic solutions, it was the only one tried that gave favorable results. Sodium fluorid, which is used for biting lice on chickens, was ineffective against the clothes louse.

In considering the results, the two most favorable compounds selected for further study were creosote and heliotropin. A strip of underwear, containing a 10 per cent. solution of creosote in lubricating oil, used at the rate of 1 c.c. to 8 square inches of underwear, worn next to the skin, was effective for twenty-four

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* Read before the Section on Pharmacology and Therapeutics at the Sixty-Ninth Annual Session of the American Medical Association, Chicago, June, 1918.

hours, after which it was found to have lost its toxicity.

Surprising results were obtained with heliotropin, which was effective for only forty-eight hours when worn. A study of why its toxicity should be lost so quickly, when it is not a very volatile compound, brought out the fact that the lubricating oil was being absorbed by other clothing, thus weakening the dose to a point at which it was no longer effective.

If heliotropin is used without oil, it crystallizes out and is soon rubbed off. It is therefore necessary to use some other compound of an oily nature that is too viscous to be absorbed rapidly by the underwear. Experiments with heavy lubricating oils, beeswax, petrolatum, spermaceti and oil of theobroma (cacao butter) were conducted. Results showed that a 5 per cent. solution of heliotropin in ether, to which 0.5 gm. of fat or wax was added, would remain effective for seventy-two hours. When increasing the amount of heliotropin, it was found to be most soluble in oil of theobroma. When 1 gm. of heliotropin to 3 gm. of oil of theobroma dissolved in ether, carbon bisulphid or benzene was used, spread over 48 square inches of underwear, the underwear could be worn for 168 hours before it lost its toxicity to lice.

Considering the results of all the experiments, it appears that 168 hours is the maximum time that an effective compound will remain in the underwear in sufficient quantities to kill the lice quickly. Using a less volatile compound, which would remain in the clothing a longer period of time, would result in a diminished toxicity, that is, an increase in the time required to kill the lice.

Division of Entomology, University Farm.

## ABSTRACT OF DISCUSSION

DR. AUGUSTUS WADSWORTH, Albany, N. Y.: I have not made any study such as Dr. Moore has made of the destruction of lice, but I stumbled upon a very effective and simple method of getting rid of these animals rapidly. We went ahead on the basis that the animal might feed on the solution, and I mixed alcohol, water and glycerin, in equal parts, and added mercuric chlorid in the solution of about 1:500 or 1:1,000. I was especially interested in Dr. Moore's remarks of figures by the government on the use of mercuric chlorid. The men in charge of the animals were directed to spray the ears of the rabbits with this solution, not carefully, but quite carelessly, in fact. Invariably, within a short time, depending on the amount of inflammatory action on the ears, they died—whether because of feeding on this solution or not I do not know. I sent a sample of this solution to Dr. Howard for investigation. It does not seem to me at all impracticable, at any rate, to give so effective and simple a remedy a trial, as in any event it would seem it can have no harmful effect. It is not necessary to use such large quantities of it. I should like to know if it would prove effective against the body louse.

**The Secret of Longevity.**—The late S. Wier Mitchell, himself an enthusiastic mountain climber and pedestrian, related to me an interesting conversation he had with the late John Biglow, who survived till he was 97. Mr. Biglow asked Dr. Mitchell how he had attained the then age of 80. Biglow being the elder, Dr. Mitchell urged him to divulge his cherished principles of life. Mr. Biglow replied with unction that he "had never smoked, never drank and never taken any form of exercise." Whereupon Dr. Mitchell replied, he himself had smoked since boyhood, had always taken wine and enormous amounts of active exercise. No man had ever lived a fuller, more agreeable or successful life than that of S. Wier Mitchell, and he ranged the hills till just before the end.—J. Madison Taylor, M.D.

**Military Medicine and Surgery**

# IMMOBILIZATION OF PATIENT ON STANDARD ARMY LITTER

### A METHOD OF SECURING THIS AND TRACTION ON BOTH LEGS WITHOUT ANY EXTRA APPARATUS EXCEPT THE PATIENT'S WAIST BELT

A. E. LEMON, M.D. (SAULT STE. MARIE, MICH.)
Captain, M. C., N. G.
FRANCE

To meet the needs of the Army for a litter in which the patient can be made secure and in which traction can be provided, this method has been designed:

1. The patient is placed on his back on the litter, and is moved upward until his head is off the canvas.

Method of securing immobilization of patient and traction on both legs on standard Army litter, without any extra apparatus except the patient's waist belt.

2. The litter sling is shortened at the head of the litter by sliding the buckle about 15 inches. This sling is then passed over the right shoulder, down through the right axilla, across under the back, up through the left axilla, over the left shoulder, and the end loop of the sling is slipped over the left handle of the litter.

3. The patient's waist belt (regulation length) is fastened fairly tight around his waist and forearms. If he is delirious the belt is passed through a slit cut in each sleeve of the blouse.

4. The patient is moved downward to the normal position on the litter, when the upper sling will become taut.

5. Strong traction is made on the patient's left foot, and at the same time a tight half hitch is made with the sling on the same foot. The sling is held taut, traction is made on the patient's right foot, and the sling secured with a similar half hitch. The sling is then tied securely to the handle of the litter at the patient's left foot.

### ADVANTAGES

The patient is now secured to the litter. He cannot fall off in any position. He cannot interfere with his mask or dressings even if left alone during stress of work. If splints are not available, he can, if this method is properly applied, be transported for miles without injury or great discomfort. Additional traction may be applied to either leg by another belt or rifle strap being applied to the foot as a "Spanish windlass." In darkness or when going around turns in trenches, the patient cannot fall off the litter. The method can be learned in one trial.

This method, in addition to its use for purposes of fixation and traction, is of especial value as a ready means of restraint when the patient is delirious or maniacal.

A spiral puttee may be used instead of the waist belt, and may also be used to make traction on either arm, the upper litter sling producing effective counter-traction.

# TYPHOID IN A COMPANY OF IMMUNIZED SOLDIERS

SAMUEL BRADBURY, M.D. (NEW YORK)
First Lieutenant, M. R. C., U. S. Army; Visiting Physician, City Hospital; Associate Visiting Physician and Chief of Cardiac Clinic, Gouverneur Hospital
FRANCE

The occurrence of four cases of typhoid fever in a company of 175 men (Company F, Eleventh Engineers, (Ry.), A. E. F.), who had been immunized but five months before the occurrence of the infection, is of enough interest to warrant a brief report. The available facts are not so complete and convincing as is desirable, especially as there is a bacteriologic discrepancy to be noted later. Despite this, it is hoped to emphasize the fact that, while an effort has been made to protect our soldiers from typhoid group infection by immunizing them, the six injections they received are not a guarantee that they will not contract one of these diseases.

Some persons do not develop immunity, or retain it a very short time, as is known from the not unusual second attack of typhoid, and in any event no soldier should abuse his immunity. Most of the men are immune, for how long is not known; but every factor that has made typhoid almost an army curiosity must be carefully observed. Rist,[1] in writing of typhoid in the French army, says that at the beginning of the war, in August, 1914, there were 2,500,000 men brought into the army who had not been immunized. By the end of 1915 more than 80 per cent. had been inoculated, and during the same period the drinking water problem had been solved, fecal matter properly disposed of, better sanitary arrangements made in the cantonments and trenches, and carriers had been searched for and isolated. In January, 1915, there were 13,993 cases of typhoid but in December, 1916, there were only 323 cases. The regiment was organized and the prophylaxis against typhoid and paratyphoid A and B and against smallpox administered at Fort Totten, N. Y. The medical officers were assigned to the regiment during its recruiting period, gave the immunizing injections, and all were with the same regiment until March, 1918. I was with the company in which the cases occurred from the latter part of August, 1917, until the middle of February, 1918, and thus had the opportunity of following the epidemic. That the immunization was thoroughly and completely done was due to the surgeon, Major H. H. VanKirk, M. C., who adopted the following procedure: Each company furnished him with two rolls, arranged in alphabetical order, of all enlisted men. An entire company was then directed to report at the dispensary tent. Each man, as he received the injection, gave his name to the medical officer in charge of the roll of the company, and the date of that injection was written opposite his name on the roll. One list was used for the dates of the three injections of typhoid vaccine and the other for the injections of paratyphoid (mixed A and B) vaccine. Smallpox vaccination was done on the day of the first injection of typhoid vaccine, and if not positive about ten days later, was repeated. In Company F, typhoid vaccine was injected, June 2, 11 and 18, and the paratyphoid vaccine, June 22 and July 2 and 11, 1917. The original check lists of this company have been consulted, and it is found that each of the four men who contracted typhoid had the three doses of each vaccine on the dates specified. The vaccine used was that supplied by the Army, contained 1 billion organisms per cubic centimeter, and the dosage was that usually employed, 0.5 c.c. for the first dose and 1 c.c. each for the second and third doses. About 1,200 men were immunized with no ill result. There were perhaps forty men who were excused from duty for a day or two, usually after the second dose.

Of the patients with typhoid, the diagnosis in every case was made by the isolation of *Bacillus typhosus* from the blood, urine or feces. All bacteriologic work was done at the hospitals of the British Expeditionary Forces to which these patients were sent. Records of the temperature and pulse and a few daily notes of the two earlier cases are available as a simple chart had been prepared for notes on the early fever and pulse rate of trench fever which had appeared in the company early in September. None of these men were held in camp longer than seven days, and the later patients were kept only two or three days.

## REPORT OF CASES

CASE 1 (161523).—A white man, aged 21, in the two weeks preceding the onset of fever had two attacks of severe epistaxis and for one week had been constipated. November 6, at sick call, he complained of stiff neck, severe occipital headache and backache. The pulse was 110 per minute and the temperature 102. After two days of rest in bed, a laxative and acetylsalicylic acid every three hours, the pain in the head and back was no better, the tongue was heavily coated, fever was continuous at about 102, and the pulse had dropped to 84. The temperature rose gradually to 104. November 13, the spleen was not felt, no rash was noted, but the pain in the back and head was considerably lessened. Typhoid was suspected and the patient was transferred to Casualty Clearing Station 56, British Expeditionary Forces, where typhoid bacilli were isolated from the stools.[2]

CASE 2 (161638).—A white man, aged 47, a steady beer drinker, and with an old mitral stenosis, noted in September that he had slight decompensation after some heavy work. He reported sick, November 14, complaining of chilliness and fever, frontal headache, slight cough, and pains in the feet and legs. There had been no epistaxis, no anorexia and no irregularity of the bowels. The temperature was 100 and rose rapidly and with quite regular daily remissions until November 17, it was 103.4, the pulse varying widely between 80 and 110. At first only the mitral stenosis was noted; November 17, a few scattered râles were heard over both sides of the back, and the next day the spleen was easily felt and there were definite rose spots on the abdomen. He was then transferred to the British Medical Services No. 9 (Lakeside, U. S. A.) General Hospital, where *Bacillus typhosus* was isolated from the urine.[3]

CASE 3 (161578).—A white man, aged 27, reported sick complaining of nausea, feverishness and diarrhea. Two days later, November 30, the temperature had risen, the tongue was very dry with a thick brown coat, and he was sent to No. 9 (Lakeside, U. S. A.) General Hospital, British Expeditionary Forces, where *Bacillus typhosus* was isolated from the blood.[3]

1. Rist, Edouard: Acute Contagious Diseases in the French Army, Am. Jour. Pub. Health, 1917, **7**, 981; abstr., THE JOURNAL A. M. A., Feb. 9, 1918, p. 415.

2. Letter from the deputy assistant director of medical services, headquarters, Third Army, British Expeditionary Forces, to the surgeon, Eleventh Engineers (Ry.), under date of Dec. 16, 1917: "Bacillus typhosus isolated from the stool of . . . 161523, and from the blood of . . . 161603, at C. C. S. 56, B. E. F."

3. Letter from the chief of the medical service, No. 9 (Lakeside, U. S. A.) General Hospital, B. E. F., to the surgeon, Eleventh Engineers (Ry.), dated April 16, 1918, in response to inquiry; "161638, . . . Bacillus typhosus isolated from urine. 161578, . . . Bacillus typhosus isolated from blood. 161553, . . . ran a course simulating typhoid. Rose spots, big spleen and dicrotic pulse. Enteric group was not isolated from blood, urine or feces."

CASE 4 (161603).—A white man, aged 19, reported sick November 29, with fever rising slightly until, December 1, he was sent to Casualty Clearing Station 56, where typhoid bacilli were isolated from the blood.[2]

### ADDITIONAL CASES OF FEVER

There were during the same period, the last three weeks of November, several other cases with fever of undetermined origin; one especially was clinically typical typhoid as reported from the hospital.[3] These undetermined cases have not been included, as all attempts at isolation of typhoid group bacilli from blood, urine or feces failed. All four typhoid patients have recovered their health, and three of them have returned to duty. As nearly as may be determined from their statements, no one was severely ill, though one (Case 2) developed a phlebitis in one leg. The one man who has not returned is now quarantined in hospital as a paratyphoid A bacillus carrier,[4] though reports of all bacteriologic examinations of each man at the time of his illness declared the infection to be *Bacillus typhosus*. Such a mistake may be easily made without careful differential tests, and unfortunately it is not possible at present to give the methods of examination. It would seem probable that in all four cases infection originated from the same source and they may have been all infections by paratyphoid A bacilli. At any rate, each man had the usual amount of each vaccine that is thought sufficient to render him immune to either of these diseases. It is generally admitted, I believe, that immunity conferred by inoculation with paratyphoid A and B bacilli is not as specific or of as long duration as that produced by vaccination with *Bacillus typhosus*.

### POSSIBLE SOURCES OF INFECTION

An investigation as to possible sources of infection was essential. The camp was on ground sloping toward the north. There were no traces of any former buildings nearer than the ruined village 500 yards west, and from the appearance of the ground no other soldiers had been camped at this place. All latrines were deep pits, box covered; urinals were of the covered soakage pit type with funnel; all garbage was burned daily at the camp. The kitchen was not screened, and there was no mess room, the men eating in their tents or huts in rainy weather and in the open otherwise. Flies were very few, even in August and September. The men were quartered in tents at first, but during the last two weeks of October huts were provided. Any one sick in camp was at once transferred to a regulation pyramidal tent reserved for that purpose, and cared for there by an enlisted man, a graduate nurse. Each typhoid patient had been living in a different hut.

In the area for 10 miles about the camp there had been no civilians for at least seven months, when Allied troops first occupied this territory. The troops in the same area averaged less than two cases of typhoid a month throughout the year, and the medical officer then in charge of bacteriology at Casualty Clearing Station 56, where patients with infectious disease were usually sent, informed me that our men were the first with typhoid he had seen for six months. There was no other typhoid in that area at that time.

The water used for drinking and cooking was piped from a large spring 4 miles distant, to "water-points" for the men, to horse troughs and to railway engine supply tanks. This water requires at the source less than one-fourth measure of chlorinated lime per hundred gallons to neutralize the organic matter present, and instructions at all water-points were to use 1 measure (= 1 gm.) of chlorinated lime per water-cart (114 gallons). For troops without water-carts there were two galvanized iron tanks of chlorinated water. Each morning one of these tanks, alternating daily, was completely emptied, refilled, chlorinated in the same strength as for water-carts, and allowed to stand for twenty-four hours before being used. They were attended to by the British Sanitation Corps and were used by several small detachments of other troops nearby. Company F took its water from these tanks, carried it about one-fourth mile to camp in large cooking pots, and there stored it in an iron tank kept for that purpose and from which water was dipped when wanted. The arrangement was not ideal: a water-cart was requisitioned for early in September but did not arrive until December. About October 10 the water began to taste as if cresol or tar had been added to it. A request, made October 14, to have this taste investigated resulted in having the water-point put "out of bounds," instructions to get our water from the railway supply tank and chlorinate it ourselves, and a reply stating that the taste was due to a new lining with which the storage tank supplying the water-point had been repaired. The water-point was continued closed for about four weeks, and in the meantime the company drew its water from the railway supply tank. The mess sergeant was entrusted with the chlorination. He was instructed in the method and care necessary in mixing the chemical, and frequent inquiries were made as to whether it had been properly done.

On examination of the kitchen force it was discovered that the mess sergeant had had typhoid in Mount Sinai Hospital, New York, in 1915; one cook had had typhoid in Florida in 1903, and one cooks' helper in 1910 had had typhoid in Pawling, N. Y. The two cooks and two cooks' helpers had been acting in that capacity since the organization of the company in June, 1917. The mess sergeant was appointed about Aug. 1, 1917. There are also employed in the kitchen four men, known as kitchen police, who are detailed daily from the company. Their duties include washing the cooking utensils, procuring the fuel and water, and cleaning up about the kitchen; at times they are entrusted with peeling vegetables, cutting bread, mixing hash, etc. Of the men who had done kitchen police duty during October and November, practically the entire company except the noncommissioned officers, six had had typhoid fever: a total of nine possible carriers working in the kitchen, three of them constantly, six at intervals.

Infection on pass to civilian area was not likely, as none of the men taken sick had been away since September. Infection by green vegetables or other uncooked food was not likely, as none had been served.

November 10, Company B and thirty men of Company E of the same regiment were ordered to

4. Letter from the commanding officer of No. 9 (Lakeside, U. S. A.) General Hospital, B. E. F., to the chief surgeon, American Expeditionary Force, copy to the surgeon, Eleventh Engineers (Ry.): "161523, . . . admitted here from 46 Stationary Hospital, B. E. F., March 19, where he was diagnosed paratyphoid carrier. 161523, . . . is now quarantined in 25 Stationary Hospital, B. E. F." Letter from headquarters, No. 9 (Lakeside, U. S. A.) General Hospital, B. E. F., to the surgeon, Eleventh Engineers (Ry.), dated May 12, 1918, in response to inquiry: "Returned. This soldier was a paratyphoid A carrier."

this camp. Company B ate only food prepared in its own kitchen, and the men of Company E were divided for rations between the messes of Companies F and B. All used the same water, at first from the railway supply tank and later from the water-point. From August 27 to December 3 there were five officers attached to Company F. The food and water for their mess came from the same kitchen as did that of the men, but the food was prepared separately. November 10, officers of the newly arrived companies, five in all, joined this officers' mess, and during the entire period there were frequent visiting officers but no cases of typhoid. Since November 29 no new cases have appeared.

December 3, as the camp had been shelled for three or four days, the whole command was ordered to leave. The water question could therefore be disregarded in measures taken to prevent further infection, and, in my opinion, the water could not be held responsible, there had been so many other troops using the identical supply without any infection.

The mess sergeant was removed, November 29, from the kitchen for other reasons than the occurrence of typhoid in the company, and while at work the next day was unfortunately captured by the Germans before any specimens of feces or urine could be examined. The remainder of the kitchen force was sent to hospital during December for careful bacteriologic examination of their stools and urine to ascertain that they were not carriers, and no bacilli were found in any of them. The stools of the six men in the company, with history of typhoid, who had worked in the kitchen during October and November were examined but once, and the results of that examination have unfortunately never been received.

In the armies of the British Expeditionary Forces, to which we were then attached, there is a standing order that no man who has had typhoid fever or dysentery shall work in the kitchen. Accordingly, from Company F four men, who gave no history of either of these diseases, were selected to act as permanent kitchen police. The cooks and cooks' helpers were allowed to continue as such, as they had been proved noncarriers.

The epidemic of four cases was caused, in my opinion, by a carrier working in the kitchen of Company F: either the mess sergeant or one of the men detailed from the company each day; but this has not been determined definitely. The infection was limited to men eating from one mess kitchen in which seven possible carriers had been working. Men of another company, eating at their own mess, but using the same water, did not have any infection, and there was no typhoid in any British troops using this water. The officers using the same water, and food prepared separately, but in the same kitchen, did not have any illness. There has been no other typhoid in any other company in this regiment.

It may be concluded that the immunity in four men in a company of 175 was not of five months' duration. That they had six weeks of hard work, with long hours and irregular meals, owing to necessities of the service at that time, and that they may have been subjected to an extremely heavy dose of infecting bacilli, as might occur in carrier infection, are possible factors. To explain the infection on a difference in strain of organism, one against which there was no protection, does not appear probable, as one would then expect an epidemic of considerably larger proportions.

### TYPHOID IN FRENCH IMMUNIZED SOLDIERS

In the present location all medical literature is very meager. One review, by Pagniez and Valléry-Radot,[5] of cases of typhoid in immunized soldiers admitted to a French army hospital between July and November, 1916, is available. They had during this period 128 patients, of whom thirty-three had not been immunized at all, seventy-six had been immunized more or less completely against typhoid fever only, and nineteen had had an early vaccination with typhoid bacilli and a later one with either a mixed vaccine of typhoid and paratyphoid A and B bacilli, or with a vaccine of paratyphoid A and B bacilli. In all but eight cases of the 128, the diagnosis was based on positive blood cultures; and of the eight in which negative blood cultures were obtained, four were in patients who had had no immunization. Among the thirty-three nonvaccinated cases there were twenty of typhoid, nine of paratyphoid A and four of paratyphoid B fever; there were eight deaths, all typhoid fever patients, and all three diseases were more severe than in men who had been immunized. Of the seventy-six patients vaccinated with typhoid bacilli only, eighteen had typhoid fever, forty-four paratyphoid A, and fourteen paratyphoid B; there was but one death, a typhoid fever patient with intestinal hemorrhage. Of the patients, twenty-two had received three or four injections of typhoid vaccine less than sixteen months before their admission to the hospital; four of them had typhoid, twelve paratyphoid A and six paratyphoid B. Of the nineteen patients who received two courses of immunizing injections, Pagniez and Valléry-Radot tabulate seventeen, but refuse to draw any conclusions from this series as the number is not sufficiently large. There were five cases of typhoid, eleven of paratyphoid A and one of paratyphoid B. One patient, in the last list, aged 26, received in 1914, four injections of typhoid vaccine, and in 1916 four doses of typhoid and paratyphoid A and B vaccine. In the fall of 1916, this man was admitted to the hospital with a mild attack of typhoid.

## New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION. W. A. PUCKNER, SECRETARY.

**SILVER PROTEINATE "HEYDEN"—Argentum Proteinicum "Heyden."**—Said to be identical with protargol. (See New and Nonofficial Remedies, 1918, p. 362.)

*Actions and Uses.*—See general articles, Silver Protein Compounds (N. N. R., 1918, p. 360).

*Dosage.*—See under protargol (N. N. R., 1918, p. 362).

Manufactured by the Heyden Chemical Works, New York. No U. S. patent or trademark.

Silver proteinate "Heyden" must conform with tests and have the properties described under protargol.

5. Pagniez, M. P., and Pasteur Valléry-Radot: Remarques sur les fièvres typhoides et paratyphoides chez les vaccinés et les non-vaccinés, d'après la statistique d'un service de typhoides (Juillet-Novembre, 1916), Ann. de méd., 1917, **4**, 308.

# MEDICAL EDUCATION IN THE UNITED STATES

## ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1918 BY THE COUNCIL ON MEDICAL EDUCATION

The tabulated statistics herewith presented are for the year ending June 30, 1918, and are based on reports received from the medical colleges or from other reliable sources. We take pleasure in acknowledging here the courtesy and cooperation of the officers of the colleges who have made the compilation of these complete statistics possible.

### STATISTICS OF COLLEGES

Table 1, on pages 536-538, gives the colleges in session during 1917-1918; the population of the city; the rating given to the college in the latest classification of the Council on Medical Education; the number of students, men and women, registered during the year; the number of 1918 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 554 are given essential facts concerning all medical colleges arranged by states.

### HOME STATES OF MEDICAL STUDENTS

Table 2, on pages 540-541, shows from what states the students came who were in attendance at each medical college during the session of 1917-1918 The influence of the proximity of the medical school is seen in the fact that states having medical colleges contribute more students in proportion to the population than those which have no colleges. This is shown by the dark zone of figures running diagonally down the page. A comparison of this table with the large tables based on state board examinations,[1] which show the distribution of the alumni of each college, is interesting. The college that has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York, with 2,232. Illinois contributed 1,048 and Pennsylvania 1,010. The next states, in the order of the number of students contributed, are: Massachusetts, 696; Ohio, 634; Missouri, 535; Texas, 446, and Michigan, 426. Four states had less than 20 each, these being Arizona, 11; New Mexico, 11; Nevada, 5, and Wyoming, 4. There were 113 students from Hawaii, Porto Rico and the Philippine Islands, and 390 students from foreign countries.

1. THE JOURNAL A. M. A., State Board Number, April 13, 1918, pages 1174 to 1177 inclusive.

In Table 3, on page 542, the students enrolled in each college are shown by classes. This permits one to see whether the attendance at each college is increasing or decreasing. The total attendance for the first year was 4,283, as compared with 4,107 last year and 3,582 in 1916. The second year attendance was 3,521, as compared with 3,117 last year, and 3,094 in 1916. The enrolments for the third and fourth years, respectively, were 2,893 and 2,933, as compared with 2,866 and 3,674 last year. The freshmen, sophomore and junior class enrolments, therefore, show increases, respectively, of 176, 404 and 27 over the enrolments of the previous year. This indicates that the college enrolments have largely been readjusted under the higher entrance requirements and, as was expected, the enrolment of medical students is again on the increase.

TABLE 4.—MEDICAL COLLEGE ATTENDANCE

| Year | Non-sectarian | Homeopathic | Eclectic | Physio-Med. | Nondescript | Total |
|---|---|---|---|---|---|---|
| 1880..... | 9,776 | 1,220 | 830 | ... | ... | 11,826 |
| 1890..... | 13,521 | 1,164 | 719 | ... | ... | 15,404 |
| 1900..... | 22,710 | 1,909 | 522 | ... | ... | 25,171 |
| 1901..... | 23,846 | 1,683 | 664 | 80 | 144 | 26,417 |
| 1902..... | 24,878 | 1,617 | 765 | 91 | 150 | 27,501 |
| 1903..... | 24,930 | 1,498 | 848 | 149 | 190 | 27,615 |
| 1904..... | 23,662 | 1,309 | 1,014 | 123 | 234 | 28,142 |
| 1905..... | 24,119 | 1,104 | 578 | 114 | 232 | 26,147 |
| 1906..... | 23,116 | 1,085 | 644 | 110 | 249 | 25,204 |
| 1907..... | 22,303 | 1,039 | 545 | 97 | 292 | 24,276 |
| 1908..... | 20,936 | 891 | 479 | 90 | 206 | 22,602 |
| 1909..... | 20,554 | 899 | 413 | 52 | 227 | 22,145 |
| 1910..... | 20,136 | 867 | 455 | 49 | 19 | 21,526 |
| 1911..... | 18,414 | 890 | 433 | 49 | ... | 19,786 |
| 1912..... | 17,277 | 827 | 308 | ... | ... | 18,412 |
| 1913..... | 15,919 | 850 | 256 | ... | ... | 17,015 |
| 1914..... | 15,438 | 794 | 270 | ... | ... | 16,502 |
| 1915..... | 13,914 | 736 | 241 | ... | ... | 14,891 |
| 1916..... | 13,121 | 638 | 263 | ... | ... | 14,022 |
| 1917..... | 12,925 | 580 | 250 | ... | ... | 13,764 |
| 1918..... | 12,727 | 540 | 138 | ... | 225 | 13,630 |

### NUMBER OF MEDICAL STUDENTS

The total number of medical students (Table 4) in the United States for the year ending June 30, 1918, excluding premedical, special and postgraduate students, was 13,630, a decrease of 134 below last year. This is the lowest decrease since 1905, when the general reduction in the number of medical students began. It is noteworthy, however (Table 12, page 544), that in the high grade (Class A) medical colleges the total enrolment of students shows an increase. Of the total number of students, 12,727 (93.4 per cent.) were in attendance at the nonsectarian (regular) colleges, 540 (4.0 per cent.) at the homeopathic, 138 (1.0 per cent.) at the eclectic, and 225 (1.6 per cent.) enrolled in three nondescript colleges. As indicated by the larger enrolments in the freshman, sophomore

*(Continued on page 539)*

# TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

| Marginal Number | NAME AND LOCATON OF COLLEGE | Population of City where College is Located (Census Bureau Estimate of 1916) | Classification by Council on Medical Education | No. of Students Registered 1917-18 | | Graduates 1918 | | Grads. with A.B., B.S., or Ph.B | Number of Teachers | Weeks in College Year | Total Fees (Dollars) | | | | Executive Officer | Session of 1918-19 | | Marginal Number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Men | Women | Men | Women | | | | 1st year | 2d year | 3d year | 4th year | | Begins 1918 | Ends 1919 | |
| | **ALABAMA** | | | **44** | ... | **11** | ... | **4** | | | | | | | | | | |
| 1 | University of Alabama School of Medicine, Mobile | 58,221 | A | 44 | ... | 11 | ... | 4 | 42 | 32 | 165 | 160 | 160 | 185 | T. H. Frazer, M.D., Dean | Oct. 3 | June 4 | 1 |
| | **ARKANSAS** | | | **52** | ... | **21** | ... | **3** | | | | | | | | | | |
| 2 | University of Arkansas Medical Department, Little Rock | 57,343 | B | 52 | ... | 21 | ... | 3 | 56 | 34 | 50 | 50 | 50 | 50 | Morgan Smith, M.D., Dean | Sept. 16 | June 4 | 2 |
| | **CALIFORNIA** | | | **425** | **45** | **76** | **10** | **10** | | | | | | | | | | |
| 3 | College of Medical Evangelists, Loma Linda | 125 | B | 57 | 5 | 18 | 3 | 3 | 40 | 36 | 166 | 161 | 161 | 161 | Newton Evans, M.D., President | Sept. 1 | May 29 | 3 |
| 4 | College of Physicians and Surgeons, Los Angeles | 503,812 | B | 83 | 9 | 25 | 3 | ... | 122 | 36 | 220 | 217 | 202 | 227 | Charles W. Bryson, M.D., Dean | Sept. 3 | June 12 | 4 |
| 5 | Oakland College of Medicine and Surgery, Oakland[1] | 198,604 | C | 15 | 2 | 3 | ... | ... | ... | ... | ... | ... | ... | ... | ..... | ..... | ..... | 5 |
| 6 | College of Physicians and Surgeons of San Francisco | 463,516 | C | 53 | 3 | 15 | 1 | ... | 40 | 39 | 193 | 193 | 193 | 218 | H. D'Arcy Power, M.D., Dean | Aug. 12 | June 5 | 6 |
| 7 | Hahnemann Medical College of the Pacific, San Francisco.—H.[2] | 463,516 | B | 10 | 1 | 10 | 1 | ... | ... | ... | ... | ... | ... | ... | ..... | ..... | ..... | 7 |
| 8 | Leland Stanford Junior Univ. School of Med., San Francisco | 463,516 | A | 72 | 10 | 5 | 2 | 7 | 72 | 34 | 200 | 155 | 150 | 150 | William Ophüls, M.D., Dean | Oct. 1 | June 17 | 8 |
| 9 | University of California Medical School, San Francisco | 463,516 | A | 135 | 15 | ... | ... | ... | 137 | 34 | 200 | 155 | 150 | 150 | Frank W. Lynch, M.D., Acting Secretary | Sept. 28 | June 4 | 9 |
| | **COLORADO** | | | **73** | **4** | **6** | **2** | **7** | | | | | | | | | | |
| 10 | University of Colorado School of Medicine, Denver[3] | 260,800 | A | 73 | 4 | 6 | 2 | 7 | 66 | 32 | 85 | 85 | 75 | 75 | Charles N. Meader, M.D., Dean | Sept. 30 | June 4 | 10 |
| | **CONNECTICUT** | | | **67** | **4** | **8** | ... | **8** | | | | | | | | | | |
| 11 | Yale University School of Medicine, New Haven | 149,685 | A | 67 | 4 | 8 | ... | 8 | 84 | 35 | 205 | 200 | 200 | 210 | George Blumer, M.D., Dean | Sept. 26 | June 18 | 11 |
| | **DISTRICT OF COLUMBIA** | | | **283** | **7** | **56** | **1** | **35** | | | | | | | | | | |
| 12 | Georgetown University School of Medicine, Washington | 363,980 | A | 69 | ... | 17 | ... | 13 | 90 | 34 | 190 | 175 | 175 | 175 | George M. Kober, M.D., Dean | Sept. 24 | June 11 | 12 |
| 13 | George Washington University Medical School, Washington | 363,980 | A | 102 | 5 | 12 | 1 | ... | 95 | 34 | 175 | 175 | 175 | 175 | W. C. Borden, M.D., Dean | Sept. 25 | June 11 | 13 |
| 14 | Howard University School of Medicine, Washington | 363,980 | A | 112 | 2 | 27 | ... | 22 | 38 | 32 | 140 | 130 | 130 | 137 | Edward A. Balloch, M.D., Dean | Oct. 1 | June 4 | 14 |
| | **GEORGIA** | | | **133** | ... | **33** | ... | **5** | | | | | | | | | | |
| 15 | Emory University School of Medicine, Atlanta | 190,558 | A | 128 | ... | 27 | ... | 2 | 106 | 33 | 172 | 160 | 155 | 180 | W. S. Elkin, M.D., Dean | Sept. 23 | June 1 | 15 |
| 16 | University of Georgia Medical Department, Augusta[3] | 50,245 | A | 70 | ... | 6 | ... | 3 | 53 | 34 | 60 | 60 | 60 | 60 | William H. Doughty, Jr., M.D., Dean | Sept. 18 | June 5 | 16 |
| | **ILLINOIS** | | | **1603** | **92** | **294** | **19** | **105** | | | | | | | | | | |
| 17 | Chicago Coll. of M. and S., Sch. of Med. of Loyola Univ., Chicago | 2,497,722 | B | 422 | 26 | 107 | 8 | ... | 159 | 32 | 155 | 155 | 155 | 155 | George E. Wyneken, M.D., Secretary | Oct. 1 | May 31 | 17 |
| 18 | Chicago Hospital College of Medicine, Chicago[4] | 2,497,722 | C | 87 | 8 | 44 | 5 | ... | ... | ... | 137 | 135 | 115 | 145 | ..... | ..... | ..... | 18 |
| 19 | Hahnemann Medical College and Hospital of Chicago.—H. | 2,497,722 | B | 48 | 3 | 14 | 1 | 4 | 86 | 32 | 176 | 162 | 177 | 192 | Joseph P. Cobb, M.D., Dean | June 3 | Feb. 3 | 19 |
| 20 | Northwestern University Medical School, Chicago | 2,497,722 | A | 281 | ... | 62 | ... | 42 | 170 | 33 | 190 | 195 | 190 | 206 | Arthur I. Kendall, M.D., Dean | Oct. 1 | June 7 | 20 |
| 21 | Rush Medical College (University of Chicago) | 2,497,722 | A | 505 | 45 | 39 | 3 | 37 | 274 | 33 | 180 | 180 | 180 | 195 | John M. Dodson, M.D., Dean | Oct. 1 | June 14 | 21 |
| 22 | University of Illinois College of Medicine, Chicago | 2,497,722 | A | 260 | 10 | 28 | 2 | 22 | 104 | 32 | 165 | 160 | 150 | 165 | William H. Browne, Secretary | Oct. 1 | June 1 | 22 |
| | **INDIANA** | | | **208** | **7** | **35** | ... | **28** | | | | | | | | | | |
| 23 | Indiana University School of Medicine, Indianapolis | 271,708 | A | 208 | 7 | 35 | ... | 28 | 163 | 34 | 100 | 100 | 130 | 130 | Charles P. Emerson, M.D., Dean | Sept. 15 | May 31 | 23 |
| | **IOWA** | | | **194** | **4** | **29** | **1** | **19** | | | | | | | | | | |
| 24 | State University of Iowa College of Medicine, Iowa City[3] | 12,033 | A | 186 | 3 | 27 | ... | 19 | 51 | 35 | 95 | 85 | 85 | 85 | Lee Wallace Dean, M.D., Dean | Sept. 16 | June 6 | 24 |
| 25 | State Univ. of Iowa College of Homeo. Medicine, Iowa City.—H. | 12,033 | A | 8 | 1 | 2 | 1 | ... | 20 | 35 | 95 | 85 | 85 | 85 | George Royal, M.D., Dean | Sept. 16 | June 6 | 25 |
| | **KANSAS** | | | **138** | **7** | **18** | ... | **11** | | | | | | | | | | |
| 26 | University of Kansas School of Medicine, Rosedale-Kansas City[3] | 404,782 | A | 138 | 7 | 18 | ... | 11 | 65 | 35 | 60 | 60 | 100 | 100 | M. T. Sudler, M.D., Dean | Sept. 16 | June 11 | 26 |
| | **KENTUCKY** | | | **99** | ... | **16** | ... | **2** | | | | | | | | | | |
| 27 | University of Louisville Medical Department, Louisville | 238,910 | A | 99 | ... | 16 | ... | 2 | 112 | 35 | 175 | 176 | 180 | 183 | Henry Enos Tuley, M.D., Dean | Sept. 24 | June 5 | 27 |
| | **LOUISIANA** | | | **267** | **8** | **62** | **1** | **18** | | | | | | | | | | |
| 28 | Tulane University of Louisiana School of Medicine, New Orleans | 371,747 | A | 267 | 8 | 62 | 1 | 18 | 131 | 35 | 200 | 200 | 200 | 230 | Isadore Dyer, M.D., Dean | Sept. 23 | June 4 | 28 |
| | **MAINE** | | | **54** | ... | **18** | ... | **8** | | | | | | | | | | |
| 29 | Bowdoin Medical School, Brunswick-Portland | 68,867 | A | 54 | ... | 18 | ... | 8 | 55 | 31 | 130 | 126 | 110 | 105 | Addison S. Thayer, M.D., Dean | Oct. 10 | June 1 | 29 |
| | **MARYLAND** | | | **588** | **53** | **127** | **9** | **95** | | | | | | | | | | |
| 30 | Johns Hopkins University Medical Department, Baltimore | 589,621 | A | 322 | 53 | 78 | 9 | 87 | 181 | 33 | 257 | 257 | 257 | 257 | J. Whitridge Williams, M.D., Dean | Oct. 1 | June 10 | 30 |
| 31 | Univ. of Maryland Sch. of Med. and Coll. of P. and S., Baltimore | 589,621 | A | 266 | ... | 49 | ... | 8 | 189 | 32 | 185 | 185 | 185 | 215 | J. M. H. Rowland, M.D., Dean | Oct. 1 | June 2 | 31 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **MASSACHUSETTS** | | | **905** | **40** | **230** | **9** | **109** | | | | | | | | | | | |
| 32 | Boston University School of Medicine, Boston[5] | 756,476 | A | 45 | 13 | 13 | 2 | 5 | 69 | 32 | 175 | 162 | 160 | 150 | John P. Sutherland, M.D., Dean | Oct. 3 | June 4 | 32 |
| 33 | College of Physicians and Surgeons, Boston[6] | 756,476 | C | 47 | ... | 14 | ... | ... | ... | ... | ... | ... | ... | ... | | ... | ... | 33 |
| 34 | Medical School of Harvard University, Boston | 756,476 | A | 384 | ... | 106 | ... | 94 | 215 | 33 | 220 | 225 | 225 | 225 | David L. Edsall, M.D., Dean | Sept. 23 | May 31 | 34 |
| 35 | Middlesex College of Medicine and Surgery, Cambridge.—N.[7] | 112,981 | C | 84 | ... | 25 | ... | ... | ... | ... | 250 | 250 | 250 | 250 | | ... | ... | 35 |
| 36 | Tufts College Medical School, Boston | 756,476 | A | 345 | 27 | 72 | 7 | 10 | 124 | 33 | 175 | 164 | 155 | 155 | Charles F. Painter, M.D., Dean | Sept. 23 | May 29 | 36 |
| | **MICHIGAN** | | | **512** | **29** | **95** | **5** | **52** | | | | | | | | | | | |
| 37 | University of Michigan Medical School, Ann Arbor[3] | 14,979 | A | 312 | 27 | 61 | 5 | 50 | 99 | 35 | 115 | 105 | 105 | 115 | Charles W. Edmunds, M.D., Assistant Dean | Oct. 1 | June 26 | 37 |
| 38 | University of Michigan Homeo. Med. School, Ann Arbor.—H. | 14,979 | A | 36 | ... | 14 | ... | ... | 20 | 35 | 115 | 105 | 105 | 115 | W. B. Hinsdale, M.D., Dean | Oct. 1 | June 26 | 38 |
| 39 | Detroit College of Medicine and Surgery, Detroit | 571,784 | A | 164 | 2 | 20 | ... | 2 | 161 | 32 | 155 | 150 | 150 | 175 | W. H. MacCraken, M.D., Dean | Oct. 12 | June 7 | 39 |
| | **MINNESOTA** | | | **269** | **11** | **36** | **2** | **36** | | | | | | | | | | | |
| 40 | University of Minnesota Medical School, Minneapolis | 363,454 | A | 269 | 11 | 36 | 2 | 36 | 159 | 35 | 150 | 150 | 150 | 150 | Elias P. Lyon, M.D., Dean | Sept. 17 | June 12 | 40 |
| | **MISSISSIPPI** | | | **57** | ... | ... | ... | ... | | | | | | | | | | | |
| 41 | University of Mississippi School of Medicine, Oxford* | 2,014 | A | 57 | ... | ... | ... | ... | 18 | 34 | 122 | 122 | ... | ... | W. S. Leathers, M.D., Dean | Sept. 18 | June 3 | 41 |
| | **MISSOURI** | | | **755** | **19** | **210** | **7** | **44** | | | | | | | | | | | |
| 42 | University of Missouri School of Medicine, Columbia* | 12,103 | A | 73 | 5 | ... | ... | ... | 25 | 34 | 73 | 45 | ... | ... | Guy L. Noyes, M.D., Dean | Sept. 16 | June 4 | 42 |
| 43 | Eclectic Medical University, Kansas City.—E.[8] | 297,847 | C | 32 | 2 | 15 | 2 | ... | ... | ... | ... | ... | ... | ... | | ... | ... | 43 |
| 44 | Kansas City College of Medicine and Surgery, Kansas City.—N.[9] | 297,847 | [9] | 95 | 1 | 22 | 1 | ... | ... | ... | 150 | 150 | 150 | 150 | D. R. Alexander, M.D., Dean | ... | ... | 44 |
| 45 | Kansas City University of Phys. and Surg., Kansas City.—N.[10] | 297,847 | C | 40 | 5 | 12 | ... | ... | ... | ... | 150 | 150 | 150 | 150 | A. L. McKenzie, D.O., Dean | ... | ... | 45 |
| 46 | National University of Arts and Sciences Med. Dept., St. Louis[11] | 757,309 | C | 35 | 2 | 35 | 2 | ... | ... | ... | ... | ... | ... | ... | | ... | ... | 46 |
| 47 | St. Louis College of Physicians and Surgeons, St. Louis[12] | 757,309 | C | 68 | 4 | 38 | 2 | ... | 49 | 32 | 140 | 140 | 140 | 165 | Waldo Briggs, M.D., Dean | ... | ... | 47 |
| 48 | St. Louis University School of Medicine, St. Louis | 757,309 | A | 276 | ... | 58 | ... | 18 | 171 | 32 | 175 | 175 | 175 | 175 | Hanau W. Loeb, M.D., Dean | Oct. 1 | June 1 | 48 |
| 49 | Washington University Medical School, St. Louis | 757,309 | A | 136 | ... | 30 | ... | 26 | 105 | 34 | 205 | 200 | 200 | 205 | G. Canby Robinson, M.D., Acting Dean | Sept. 26 | June 12 | 49 |
| | **NEBRASKA** | | | **280** | **6** | **45** | **1** | **24** | | | | | | | | | | | |
| 50 | Lincoln Medical College, Lincoln.—E.[13] | 46,515 | C | 15 | 1 | 3 | ... | ... | ... | ... | ... | ... | ... | ... | | ... | ... | 50 |
| 51 | John A. Creighton Medical College, Omaha | 165,470 | A | 90 | ... | 16 | ... | 5 | 40 | 33 | 157 | 147 | 147 | 172 | Hermann von W. Schulte, M.D., Dean | Sept. 23 | May 31 | 51 |
| 52 | University of Nebraska College of Medicine, Omaha | 165,470 | A | 175 | 5 | 26 | 1 | 19 | 64 | 36 | 135 | 120 | 120 | 150 | Irving S. Cutter, M.D., Dean | Sept. 20 | May 26 | 52 |
| | **NEW HAMPSHIRE** | | | **31** | ... | ... | ... | ... | | | | | | | | | | | |
| 53 | Dartmouth Medical School, Hanover* | 2,075 | A | 31 | ... | ... | ... | ... | 12 | 36 | 172 | 173 | ... | ... | John M. Gile, M.D., Dean | Sept. 19 | June 18 | 53 |
| | **NEW YORK** | | | **2420** | **106** | **422** | **15** | **143** | | | | | | | | | | | |
| 54 | Albany Medical College, Albany | 110,199 | A | 80 | 1 | 11 | ... | 1 | 60 | 34 | 195 | 180 | 165 | 165 | Thomas Ordway, M.D., Dean | Sept. 23 | June 9 | 54 |
| 55 | University of Buffalo Department of Medicine, Buffalo | 468,558 | A | 196 | 19 | 22 | 4 | 3 | 107 | 34 | 205 | 200 | 200 | 200 | C. Sumner Jones, M.D., Dean | Sept. 23 | June 6 | 55 |
| 56 | Columbia University Coll. of Phys. and Surgs., New York City | 5,602,841 | A | 580 | 9 | 113 | ... | 80 | 261 | 33 | 265 | 251 | 250 | 275 | Samuel W. Lambert, M.D., Dean | Sept. 25 | June 5 | 56 |
| 57 | Cornell University Medical College, New York City | 5,602,841 | A | 150 | 36 | 28 | 4 | 31 | 138 | 34 | 190 | 185 | 185 | 200 | Walter L. Niles, M.D., Acting Dean | Oct. 1 | June 12 | 57 |
| 58 | Fordham University School of Medicine, New York City | 5,602,841 | A | 297 | ... | 63 | ... | 3 | 130 | 34 | 256 | 241 | 235 | 235 | Joseph Byrne, M.D., Dean | Sept. 27 | June 10 | 58 |
| 59 | Long Island College Hospital, Brooklyn | 1,928,734 | A | 339 | 6 | 46 | ... | 1 | 128 | 33 | 255 | 250 | 250 | 275 | Otto V. Huffman, M.D., Dean | Sept. 23 | May 29 | 59 |
| 60 | New York Homeopathic Med. Coll. and Flower Hospital.—H. | 5,602,841 | B | 170 | ... | 26 | ... | 4 | 80 | 31 | 200 | 200 | 200 | 200 | H. R. Barrows, Registrar | Sept. 24 | May 21 | 60 |
| 61 | New York Medical College and Hospital for Women.—H.[14] | 5,602,841 | B | .... | 27 | ... | 4 | ... | ... | ... | ... | ... | ... | ... | | ... | ... | 61 |
| 62 | University and Bellevue Hospital Medical College, New York City | 5,602,841 | A | 491 | ... | 92 | ... | 4 | 146 | 33 | 225 | 225 | 225 | 225 | Samuel A. Brown, M.D., Dean | Sept. 25 | June 11 | 62 |
| 63 | Syracuse University College of Medicine, Syracuse | 155,624 | A | 117 | 8 | 21 | 3 | 16 | 85 | 33 | 210 | 210 | 210 | 220 | John L. Heffron, M.D., Dean | Oct. 1 | June 11 | 63 |
| | **NORTH CAROLINA** | | | **97** | ... | ... | ... | ... | | | | | | | | | | | |
| 64 | University of North Carolina School of Medicine, Chapel Hill* | 1,149 | A | 57 | ... | ... | ... | ... | 15 | 34 | 132 | 132 | ... | ... | Isaac Hall Manning, M.D., Dean | Sept. 12 | May 30 | 64 |
| 65 | Leonard Medical School, Raleigh* | 19,980 | B | 5 | ... | ... | ... | ... | 12 | 32 | 115 | 115 | ... | ... | George H. Stoddard, M.D., Dean | Oct. 1 | May 29 | 65 |
| 66 | Wake Forest College School of Medicine, Wake Forest* | 1,443 | A | 35 | ... | ... | ... | ... | 11 | 33 | 115 | 115 | ... | ... | E. B. Earnshaw, Secretary | Sept. 3 | May 30 | 66 |
| | **NORTH DAKOTA** | | | **28** | **2** | ... | ... | ... | | | | | | | | | | | |
| 67 | Univ. of North Dakota School of Med., University (Grand Forks)* | 15,332 | A | 28 | 2 | ... | ... | ... | 10 | 35 | 50 | 50 | ... | ... | Harley E. French, M.D., Dean | Sept. 23 | June 18 | 67 |
| | **OHIO** | | | **553** | **20** | **125** | **3** | **63** | | | | | | | | | | | |
| 68 | Eclectic Medical College, Cincinnati.—E. | 410,476 | B | 83 | 5 | 21 | 1 | 2 | 36 | 32 | 120 | 120 | 120 | 120 | John K. Scudder, M.D., Secretary | Sept. 12 | May 12 | 68 |
| 69 | University of Cincinnati College of Medicine | 410,476 | A | 137 | 5 | 21 | 2 | 11 | 136 | 34 | 150 | 150 | 150 | 170 | Frank B. Cross, M.D., Secretary | Oct. 1 | June 14 | 69 |
| 70 | Western Reserve University School of Medicine, Cleveland | 674,073 | A | 181 | ... | 46 | ... | 46 | 111 | 34 | 175 | 160 | 154 | 155 | Carl A. Hamann, M.D., Dean | Sept. 26 | June 12 | 70 |
| 71 | Ohio State University College of Medicine, Columbus | 214,878 | A | 116 | 8 | 23 | ... | 3 | 92 | 36 | 152 | 152 | 152 | 152 | F. L. Landacre, M.D., Acting Dean | Sept. 17 | June 17 | 71 |
| 72 | Ohio State University College of Homeo. Med., Columbus.—H. | 214,878 | B | 36 | 2 | 14 | ... | 1 | 23 | 35 | 152 | 152 | 152 | 152 | Claude A. Burrett, M.D., Dean | Sept. 17 | June 12 | 72 |
| | **OKLAHOMA** | | | **72** | **4** | **13** | ... | **7** | | | | | | | | | | | |
| 73 | University of Oklahoma School of Med., Norman-Oklahoma City | 92,943 | B | 72 | 4 | 13 | ... | 7 | 65 | 34 | 58 | 40 | 20 | 20 | Leroy Long, M.D., Dean | Sept. 17 | June 3 | 73 |
| | **OREGON** | | | **68** | **7** | **19** | **2** | **7** | | | | | | | | | | | |
| 74 | University of Oregon Medical School, Portland | 295,463 | A | 68 | 7 | 19 | 2 | 7 | 82 | 32 | 150 | 150 | 150 | 150 | K. A. J. MacKenzie, M.D., Dean | Oct. 1 | May 31 | 74 |
| | **PENNSYLVANIA** | | | **1307** | **74** | **270** | **18** | **109** | | | | | | | | | | | |
| 75 | Hahnemann Medical College and Hospital of Philadelphia.—H. | 1,709,518 | A | 146 | ... | 12 | ... | 1 | 84 | 32 | 180 | 180 | 180 | 195 | William A. Pearson, M.D., Dean | Sept. 30 | May 30 | 75 |
| 76 | Jefferson Medical College of Philadelphia | 1,709,518 | A | 466 | ... | 102 | ... | 15 | 173 | 34 | 215 | 210 | 210 | 210 | Ross V. Patterson, M.D., Dean | Sept. 23 | June 7 | 76 |
| 77 | Temple University Department of Medicine, Philadelphia | 1,709,518 | B | 103 | 3 | 19 | 8 | 1 | 93 | 34 | 175 | 170 | 160 | 161 | Frank C. Hammond, M.D., Dean | Sept. 16 | June 1 | 77 |
| 78 | University of Pennsylvania School of Medicine, Philadelphia | 1,709,518 | A | 461 | 18 | 113 | 2 | 64 | 204 | 35 | 233 | 210 | 210 | 214 | William Pepper, M.D., Dean | Sept. 27 | June 18 | 78 |
| 79 | Woman's Medical College of Pennsylvania, Philadelphia | 1,709,518 | A | ... | 43 | ... | 8 | 6 | 58 | 34 | 197 | 176 | 183 | 186 | Martha Tracy, M.D., Dean | Sept. 18 | June 4 | 79 |
| 80 | University of Pittsburgh School of Medicine, Pittsburgh | 579,090 | A | 137 | 10 | 24 | 3 | 22 | 130 | 34 | 265 | 250 | 250 | 255 | Ogden M. E. Edwards, M.D., Dean | Sept. 23 | June 6 | 80 |

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

* Gives only the first two years of the medical course.

## TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA—(Concluded)

| Marginal Number | NAME AND LOCATON OF COLLEGE | Population of City where College is Located (Census Bureau Estimate of 1916) | Classification by Council on Medical Education | No. of Students Registered 1917-18 | | Graduates 1918 | | Grads. with A.B., B.S., or Ph.B | Number of Teachers | Weeks in College Year | Total Fees (Dollars) | | | | Executive Officer | Session of 1918-19 | | Marginal Number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Men | Women | Men | Women | | | | 1st year | 2d year | 3d year | 4th year | | Begins 1918 | Ends 1919 | |
| | **SOUTH CAROLINA** | | | **55** | ... | **9** | ... | **4** | | | | | | | | | | |
| 81 | Medical College of the State of South Carolina, Charleston | 60,734 | A | 55 | ... | 9 | ... | 4 | 71 | 33 | 150 | 150 | 150 | 145 | Robert Wilson, Jr., M.D., Dean | Sept. 27 | June 5 | 81 |
| | **SOUTH DAKOTA** | | | **17** | **2** | ... | ... | ... | | | | | | | | | | |
| 82 | University of South Dakota College of Medicine, Vermilion* | 2,376 | A | 17 | 2 | ... | ... | ... | 10 | 35 | 60 | 60 | ... | ... | Christian P. Lommen, B.S., Dean | Sept. 17 | June 11 | 82 |
| | **TENNESSEE** | | | **423** | **3** | **124** | **2** | **25** | | | | | | | | | | |
| 83 | University of Tennessee College of Medicine, Memphis[3] | 148,995 | A | 82 | 2 | 17 | 1 | 5 | 111 | 34 | 107 | 102 | 102 | 127 | A. H. Wittenborg, M.D., Dean | Sept. 21 | June 4 | 83 |
| 84 | University of West Tennessee Coll. of Med. and Surg., Memphis | 148,995 | C | 21 | ... | 8 | ... | ... | 22 | 32 | 65 | 65 | 65 | 75 | M. V. Lynk, M.D., Dean | Sept. 23 | May 20 | 84 |
| 85 | Meharry Medical College, Nashville | 117,057 | B | 205 | 1 | 76 | 1 | 14 | 24 | 30 | 70 | 70 | 70 | 80 | G. W. Hubbard, M.D., President | Oct. 8 | May 22 | 85 |
| 86 | Vanderbilt University School of Medicine, Nashville | 117,057 | A | 115 | ... | 23 | ... | 6 | 79 | 33 | 156 | 150 | 150 | 175 | B. F. Hambleton, M.D., Acting Dean | Sept. 30 | June 11 | 86 |
| | **TEXAS** | | | **317** | **16** | **62** | **1** | **15** | | | | | | | | | | |
| 87 | Baylor University College of Medicine, Dallas | 124,527 | A | 63 | 5 | 13 | ... | ... | 58 | 32 | 160 | 155 | 155 | 150 | Edward H. Cary, M.D., Dean | Sept. 30 | May 29 | 87 |
| 88 | Fort Worth School of Medicine, Fort Worth[15] | 104,562 | B | 56 | ... | 10 | ... | ... | ... | ... | ... | ... | ... | ... | ..... | ..... | ..... | 88 |
| 89 | University of Texas Department of Medicine, Galveston | 41,863 | A | 198 | 11 | 39 | 1 | 15 | 40 | 32 | 78 | 48 | 31 | 18 | William S. Carter, M.D., Dean | Oct. 1 | May 31 | 89 |
| | **UTAH** | | | **33** | **1** | ... | ... | ... | | | | | | | | | | |
| 90 | University of Utah School of Medicine, Salt Lake City*[3] | 117,399 | A | 33 | 1 | ... | ... | ... | 23 | 33 | 95 | 95 | ... | ... | Perry G. Snow, M.D., Dean | Sept. 30 | June 7 | 90 |
| | **VERMONT** | | | **105** | ... | **22** | ... | **5** | | | | | | | | | | |
| 91 | University of Vermont College of Medicine, Burlington | 21,432 | A | 105 | ... | 22 | ... | 5 | 38 | 32 | 145 | 145 | 145 | 170 | H. C. Tinkham, M.D., Dean | Oct. 9 | June 4 | 91 |
| | **VIRGINIA** | | | **239** | ... | **65** | ... | **21** | | | | | | | | | | |
| 92 | Medical College of Virginia, Richmond | 156,687 | A | 139 | ... | 43 | ... | 16 | 132 | 36 | 169 | 169 | 169 | 201 | Stuart McGuire, M.D., Dean | Sept. 18 | June 5 | 92 |
| 93 | University of Virginia Department of Medicine, Charlottesville | 12,500 | A | 100 | ... | 22 | ... | 5 | 35 | 36 | 150 | 150 | 150 | 150 | Theodore Hough, M.D., Dean | Sept. 12 | June 11 | 93 |
| | **WEST VIRGINIA** | | | **33** | **3** | ... | ... | ... | | | | | | | | | | |
| 94 | West Virginia University School of Medicine, Morgantown* | 12,974 | A | 33 | 3 | ... | ... | ... | 12 | 34 | 50 | 40 | ... | ... | John N. Simpson, M.D., Dean | Sept. 23 | June 11 | 94 |
| | **WISCONSIN** | | | **180** | **7** | **7** | ... | **2** | | | | | | | | | | |
| 95 | University of Wisconsin Medical School, Madison*[3] | 30,699 | A | 114 | 6 | ... | ... | ... | 28 | 35 | 70 | 70 | ... | ... | C. R. Bardeen, M.D., Dean | Oct. 1 | June 25 | 95 |
| 96 | Marquette University School of Medicine, Milwaukee | 436,535 | A | 66 | 1 | 7 | ... | 2 | 81 | 36 | 195 | 195 | 195 | 225 | L. F. Jermain, M.D., Dean | Sept. 17 | June 17 | 96 |
| | **CANADA[16]** | | | **1638** | **84** | **268** | **4** | **39** | | | | | | | | | | |
| 97 | University of Alberta Faculty of Medicine, Strathcona, Alta.† | 5,579 | .. | 39 | 9 | ... | ... | ... | 19 | 30 | 88 | 88 | ... | ... | Cecil E. Race, A.B., Registrar | Oct. 1 | May 15 | 97 |
| 98 | Dalhousie University Faculty of Medicine, Halifax, N. S. | 46,619 | B | 66 | 11 | 7 | ... | 1 | 36 | 32 | 110 | 120 | 120 | 120 | D. Fraser Harris, M.D., Secretary | Oct. 1 | May 29 | 98 |
| 99 | Queen's University Faculty of Medicine, Kingston, Ont. | 18,874 | B | 180 | ... | 22 | ... | 5 | 49 | 33 | 115 | 115 | 115 | 115 | J. C. Connell, M.D., Dean | Sept. 30 | June 6 | 99 |
| 100 | University of Toronto Faculty of Medicine, Toronto, Ont. | 376,538 | A | 471 | 51 | 70 | 4 | 9 | 205 | 33 | 150 | 150 | 150 | 150 | C. K. Clarke, M.D., Dean | Sept. 24 | June 1 | 100 |
| 101 | Western University Faculty of Medicine, London, Ont. | 46,300 | B | 68 | ... | 11 | ... | 1 | 54 | 32 | 115 | 115 | 115 | 140 | H. A. McCallum, M.D., Dean | Oct. 1 | May 30 | 101 |
| 102 | McGill University Faculty of Medicine, Montreal, Que. | 470,480 | A | 361 | 4 | 62 | ... | 10 | 174 | 32 | 174 | 174 | 174 | 204 | John W. Scane, M.D., Registrar | Oct. 1 | May 30 | 102 |
| 103 | Montreal School of Medicine and Surgery, Montreal, Que. | 470,480 | B | 231 | ... | 43 | ... | ... | 80 | 36 | 118 | 126 | 126 | 138 | L. D. Mignault, M.D., Secretary | Oct. 3 | June 30 | 103 |
| 104 | Laval University Faculty of Medicine, Quebec, Que. | 78,190 | B | 103 | ... | 19 | ... | 10 | 35 | 3 | 90 | 90 | 90 | 90 | Edwin Turcot, M.D., Dean | June 4 | Dec. 18 | 104 |
| 105 | University of Manitoba, Manitoba Medical College, Winnipeg | 136,035 | B | 119 | 9 | 32 | ... | 3 | 59 | 29 | 160 | 160 | 160 | 160 | S. Willis Prowse, M.D., Dean | Oct. 1 | May 9 | 105 |

E.—Eclectic; H.—Homeopathic; N.—Nondescript.

* Gives only the first two years of the medical course.

† Gives the first three years of the five-year medical course.

1. College reported closed.
2. Has just graduated its last class. Discontinued when elective chairs in homeopathic materia medica, therapeutics and practice were established in the University of California Medical School.
3. Fees given are for residents of the state. For nonresidents amounts should be added for each year in the several states as follows: Colorado, $25; Georgia, $100; Iowa, $15; Kansas, $20 (for the first two years only); Michigan, $20 (and $25 extra the first year for matriculation); Tennessee, $50; Utah, $25, and Wisconsin, $124.
4. Since July 1, 1917, has not been recognized by the Illinois Department of Registration and Education. It is reported not recognized also by the licensing boards of 36 other states.
5. This school states that it is no longer a sectarian institution.
6. Figures given are approximate. Reported not recognized by the licensing boards of 37 states.
7. Has been closely related to an osteopathic college and has granted liberal advanced standing for work done in osteopathy. Reported not recognized by the licensing boards of 31 states.
8. College reported closed.
9. This college was an offshoot of the Eclectic Medical University although it is reported as not recognized as an eclectic institution by the National Eclectic Association. It is reported not recognized by the Missouri State Board of Health and by the licensing boards of 31 other states. Under these circumstances it cannot be rated higher than Class C, pending an inspection which it has refused.
10. This college was formerly the Central College of Osteopathy. In 1917 amended its charter so as to grant degrees in medicine; then took the name of Central College Medical Department, and recently assumed its present title. Is reported not recognized by the licensing boards of Missouri and 27 other states.
11. College reported closed.
12. The Missouri State Board of Health states that recognition has just been withdrawn from this college. It is reported also to be not recognized by the licensing boards of 34 other states.
13. Reported not recognized by the licensing boards of Nebraska and of 31 other states.
14. It is reported that the college has been abolished and its teaching faculty dismissed. A new charter has been asked for.
15. College reported closed.
16. In Canada the entrance requirement to all medical schools is a secondary school education. The first year of the five-year course is devoted largely to courses in physics, chemistry and biology, which, in the United States, are required to have been completed in one or two years of premedical college work. Their courses may, therefore, be considered the equivalent of medical schools in the United States which require one year of college work for admission. On a basis similar to that of Canada, 82 of the medical schools of the United States would be considered as giving a six-year medical course—six years of collegiate work based on a four-year high school education.

(Continued from page 535)

and junior classes, the enrolment of medical students has about reached its lowest ebb under the higher entrance requirements.

### NUMBER OF MEDICAL GRADUATES

The total number of graduates for the year ending June 30, 1918, was 2,670, a decrease of 709 below 1917. There were 137 other students who completed the four year medical course, whose diplomas are withheld pending completion of the hospital internship. The number of graduates from the nonsectarian colleges was 2,454, or 680 less than last year. The number from the homeopathic colleges was 114, or 66 less than last year, and from the eclectic colleges there were 42 graduates, or 23 less than last year. The three nondescript colleges had 60 graduates.

TABLE 5.—MEDICAL COLLEGE GRADUATES

| Year | Non-sectarian | Homeo-pathic | Eclectic | Physio-Med. | Nonde-script | Total |
|---|---|---|---|---|---|---|
| 1880..... | 2,673 | 380 | 188 | .. | .. | 3.241 |
| 1890..... | 3.853 | 380 | 221 | .. | .. | 4.454 |
| 1900..... | 4,715 | 413 | 86 | .. | .. | 5,214 |
| 1901..... | 4,879 | 387 | 148 | 18 | 12 | 5.444 |
| 1902..... | 4,508 | 336 | 138 | 16 | 11 | 5.009 |
| 1903..... | 5,068 | 420 | 149 | 24 | 17 | 5,698 |
| 1904..... | 5,190 | 371 | 146 | 20 | 20 | 5,747 |
| 1905..... | 5,126 | 276 | 153 | 22 | 23 | 5,600 |
| 1906..... | 4,841 | 286 | 186 | 22 | 29 | 5,364 |
| 1907..... | 4,591 | 225 | 121 | 11 | 32 | 4,980 |
| 1908..... | 4,370 | 215 | 116 | 12 | 28 | 4,741 |
| 1909..... | 4,163 | 209 | 84 | 15 | 44 | 4,515 |
| 1910..... | 4,113 | 183 | 114 | 16 | 14 | 4.440 |
| 1911..... | 4,006 | 152 | 110 | 5 | .. | 4,273 |
| 1912..... | 4,206 | 185 | 92 | .. | .. | 4,483 |
| 1913..... | 3,679 | 209 | 93 | .. | .. | 3,981 |
| 1914..... | 3,370 | 154 | 70 | .. | .. | 3.594 |
| 1915..... | 3,286 | 195 | 55 | .. | .. | 3,536 |
| 1916..... | 3,274 | 166 | 78 | .. | .. | 3,518 |
| 1917..... | 3,134 | 180 | 65 | .. | .. | 3,379 |
| 1918..... | 2,454 | 114 | 42 | .. | 60 | 2,670* |

* Altogether 2,807 students successfully completed the courses of the senior year. There were 22 of these at the University of California, 77 at Rush Medical College, and 38 at the University of Minnesota from whom the degree has been withheld pending completion of the hospital internship.

### GRADUATES HOLDING DEGREES IN ARTS

Of the 2,670 medical graduates, 1,024 were reported to hold also degrees in arts or science This total includes those taking the combined courses in arts or science and medicine. This year 38.4 per cent. of all graduates held collegiate degrees, as compared with 32.5 per cent. last year, 26.9 per cent. in 1916, and 24.3 per cent. in 1915. This increase is what was expected under the general adoption by medical schools of the entrance requirements of two years of college work. In 1910 it is noteworthy that only 15.3 per cent. of the graduates showed this evidence of higher preliminary qualifications. Of the 2,454 nonsectarian school graduates, 1,007, or 41.0 per cent., were reported to have baccalaureate degrees; of the homeopathic graduates 15, or 13.2 per cent., were so reported, and of the eclectic graduates this year none was reported as holding such a degree. As will be noted by referring to Table 11, of the 1,024 graduates holding baccalaureate degrees, 143—the largest number—came from the New York colleges. Last year Massachusetts furnished the largest quota, and in 1915 and previous years the Illinois colleges were in the lead. Massachusetts and Pennsylvania each furnished 109 this year, followed by Illinois with 105 and Maryland with 95 The percentage of graduates holding collegiate degrees is rapidly increasing and will continue to increase, since most medical schools are now requiring two years of college work for admission, which brings more students in the combined course for the B.S. and M.D. degrees.

TABLE 6.—MEDICAL GRADUATES WITH LIBERAL ARTS DEGREES

| Year | Nonsectarian | | | Homeopathic | | | Eclectic | | | Totals | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Graduates | A.B., B.S. | Per Cent. | Graduates | A.B., B.S. | Per Cent. | Graduates | A.B., B.S. | Per Cent. | Graduates | A.B., B.S. | Per Cent. |
| 1910..... | 4,113 | 664 | 16.1 | 183 | 13 | 7.1 | 114 | 3 | 2.6 | 4,440 | 680 | 15.3 |
| 1911..... | 4,006 | 683 | 17.0 | 152 | 18 | 11.8 | 110 | 4 | 3.6 | 4,273 | 705 | 16.5 |
| 1912..... | 4,206 | 744 | 17.7 | 185 | 15 | 8.1 | 92 | 4 | 4.3 | 4,483 | 763 | 17.0 |
| 1913..... | 3,679 | 732 | 19.9 | 209 | 20 | 9.6 | 93 | 1 | 1.1 | 3,981 | 753 | 18.9 |
| 1914..... | 3,370 | 794 | 23.5 | 154 | 7 | 4.5 | 70 | 6 | 8.6 | 3,594 | 807 | 22.5 |
| 1915..... | 3,286 | 839 | 25.5 | 195 | 16 | 8.2 | 55 | 3 | 5.5 | 3,536 | 858 | 24.3 |
| 1916..... | 3,274 | 928 | 28.3 | 166 | 20 | 12.0 | 78 | 0 | 0.0 | 3,518 | 948 | 26.9 |
| 1917..... | 3,134 | 1078 | 34.4 | 180 | 19 | 10.5 | 65 | 2 | 3.1 | 3,379 | 1099 | 32.5 |
| 1918*..... | 2,454 | 1007 | 41.0 | 114 | 15 | 13.2 | 60 | 0 | 0.0 | 2,670 | 1024 | 38.4 |

* None of the 60 graduates of nondescript colleges is reported as having a collegiate degree.

### WOMEN IN MEDICINE

During the past year there were 581 women studying medicine, or 29 less than last year, but 15 more than in 1916. The percentage of women to all medical students is 4.3, a percentage approximating those of previous years. This is true also in regard to women graduates. There were 106 women graduates this year, 47 less than last year and 28 less than in 1916. Of all the women matriculants, a smaller percentage

TABLE 7.—WOMEN IN MEDICINE

| Year | Total Women Students | Percentage of All Students, Both Sexes | Total Women Graduates | Percentage of Graduates, Both Sexes | Women's Colleges | Students | Percentage of All Women Students | Graduates | Percentage of All Women Graduates | Co-ed. Schools | Students | Percentage of All Women Students | Graduates | Percentage of All Women Graduates |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1904 | 1,129 | 4.3 | 244 | 4.0 | 3 | 183 | 16.2 | 56 | 23.0 | 97 | 946 | 83.8 | 198 | 77.0 |
| 1905 | 1,073 | 4.1 | 219 | 4.0 | 3 | 221 | 20.6 | 54 | 24.5 | 96 | 852 | 79.4 | 165 | 75.5 |
| 1906 | 805 | 3.5 | 233 | 4.3 | 3 | 189 | 21.0 | 33 | 14.1 | 99 | 706 | 79.0 | 200 | 85.9 |
| 1907 | 928 | 3.8 | 211 | 4.2 | 3 | 210 | 22.6 | 39 | 18.5 | 86 | 718 | 77.4 | 172 | 81.5 |
| 1908 | 835 | 3.7 | 185 | 3.9 | 3 | 186 | 22.3 | 46 | 24.9 | 88 | 649 | 77.7 | 139 | 75.1 |
| 1909 | 921 | 4.2 | 162 | 3.7 | 3 | 169 | 18.4 | 33 | 20.3 | 91 | 752 | 81.6 | 129 | 79.7 |
| 1910 | 907 | 4.2 | 157 | 3.5 | 3 | 155 | 17.1 | 41 | 26.1 | 82 | 752 | 82.9 | 116 | 73.9 |
| 1911 | 680 | 3.4 | 159 | 3.7 | 2 | 134 | 19.7 | 36 | 22.6 | 74 | 546 | 80.3 | 123 | 77.4 |
| 1912 | 679 | 3.2 | 142 | 3.2 | 2 | 143 | 21.1 | 32 | 22.5 | 64 | 536 | 78.9 | 110 | 77.5 |
| 1913 | 640 | 3.8 | 154 | 3.8 | 2 | 138 | 21.6 | 33 | 21.4 | 55 | 502 | 78.6 | 121 | 78.6 |
| 1914 | 631 | 3.8 | 121 | 3.4 | 2 | 135 | 21.4 | 25 | 20.7 | 54 | 496 | 78.6 | 96 | 79.3 |
| 1915 | 592 | 4.0 | 130 | 3.7 | 2 | 116 | 19.6 | 38 | 29.2 | 53 | 462 | 80.4 | 92 | 70.8 |
| 1916 | 566 | 4.0 | 134 | 3.8 | 2 | 102 | 18.0 | 28 | 20.0 | 51 | 464 | 82.0 | 106 | 80.0 |
| 1917 | 610 | 4.5 | 153 | 4.5 | 2 | 81 | 13.3 | 29 | 18.9 | 56 | 529 | 86.7 | 124 | 81.1 |
| 1918 | 581 | 4.3 | 106 | 4.0 | 2 | 70 | 12.0 | 12 | 11.3 | 60 | 511 | 87.9 | 94 | 88.7 |

(Continued on page 542)

| Marginal Number | NAME OF COLLEGE | 1 Alabama.....140 | 2 Arizona.....11 | 3 Arkansas.....97 | 4 California.....442 | 5 Colorado.....118 | 6 Connecticut....230 | 7 Delaware.....36 | 8 Dist. of Col. ....90 | 9 Florida.....51 | 10 Georgia.....260 | 11 Idaho.....33 | 12 Illinois.....1,048 | 13 Indiana.....245 | 14 Iowa.....332 | 15 Kansas.....200 | 16 Kentucky.....119 | 17 Louisiana.....151 | 18 Maine.....80 | 19 Maryland.....192 | 20 Massachusetts..606 | Marginal Number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | University of Alabama School of Medicine | 41 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | 1 |
| 2 | University of Arkansas Medical Department | 1 | .... | 39 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | 1 | .... | .... | .... | 2 |
| 3 | College of Medical Evangelists | .... | 2 | .... | 19 | 3 | .... | .... | .... | 1 | .... | 1 | 2 | 2 | 1 | 3 | .... | .... | .... | .... | .... | 3 |
| 4 | College of Physicians and Surgeons, Los Angeles | .... | .... | .... | 86 | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 4 |
| 5 | Oakland College of Medicine and Surgery* | .... | .... | .... | 17 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 5 |
| 6 | College of Physicians and Surgeons of San Francisco | .... | 1 | .... | 48 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 6 |
| 7 | Hahnemann Medical College of the Pacific* | .... | .... | .... | 8 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 7 |
| 8 | Leland Stanford Junior University School of Medicine | .... | .... | .... | 59 | 1 | .... | .... | .... | .... | .... | 1 | .... | 1 | 1 | .... | .... | .... | .... | .... | 1 | 8 |
| 9 | University of California Medical School | .... | .... | .... | 131 | .... | .... | .... | .... | .... | .... | 1 | .... | 2 | .... | 1 | .... | 1 | .... | .... | 1 | 9 |
| 10 | University of Colorado School of Medicine | .... | .... | .... | .... | 70 | .... | .... | .... | .... | .... | 1 | .... | .... | .... | 2 | .... | .... | .... | .... | .... | 10 |
| 11 | Yale University School of Medicine | .... | .... | .... | 1 | .... | 47 | .... | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... | .... | .... | 3 | 11 |
| 12 | Georgetown University School of Medicine | .... | .... | .... | .... | .... | 5 | .... | 22 | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | 1 | 3 | 3 | 12 |
| 13 | George Washington University Medical School | 1 | .... | .... | .... | .... | 1 | .... | 37 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 5 | 3 | 13 |
| 14 | Howard University School of Medicine | 3 | .... | 2 | .... | .... | .... | 1 | 14 | 3 | 1 | .... | 3 | .... | 1 | .... | 5 | .... | .... | 8 | .... | 14 |
| 15 | Emory University School of Medicine | 12 | .... | .... | .... | .... | .... | .... | .... | 2 | 84 | .... | .... | .... | 1 | .... | 2 | 1 | .... | .... | .... | 15 |
| 16 | University of Georgia Medical Department | .... | .... | .... | .... | .... | .... | .... | .... | .... | 67 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 16 |
| 17 | Chicago Coll. of M. & S., Sch. of Med. of Loyola Univ. | 2 | .... | .... | 1 | 3 | 5 | .... | 1 | 3 | 3 | 1 | 244 | 9 | 9 | 6 | 6 | .... | 2 | 4 | 4 | 17 |
| 18 | Chicago Hospital College of Medicine* | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 95 | .... | .... | .... | .... | .... | .... | .... | .... | 18 |
| 19 | Hahnemann Med. College and Hosp. of Chicago.—H. | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 14 | 7 | 6 | 3 | 1 | .... | .... | .... | .... | 19 |
| 20 | Northwestern University Medical School | .... | .... | 3 | 3 | 4 | .... | .... | .... | 2 | .... | 1 | 124 | 10 | 15 | 12 | 1 | 1 | .... | .... | .... | 20 |
| 21 | Rush Medical College (University of Chicago) | .... | 2 | 1 | 8 | 5 | 1 | .... | .... | 1 | .... | 3 | 233 | 10 | 25 | 35 | 3 | 1 | .... | .... | .... | 21 |
| 22 | University of Illinois College of Medicine | .... | 1 | .... | 5 | 2 | .... | .... | .... | .... | 1 | .... | 165 | 3 | 23 | 3 | 1 | .... | .... | .... | .... | 22 |
| 23 | Indiana University School of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 3 | 207 | 1 | .... | .... | .... | .... | .... | .... | 23 |
| 24 | State University of Iowa College of Medicine | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | 3 | 3 | .... | 168 | 1 | .... | .... | .... | .... | .... | 24 |
| 25 | State University of Iowa College of Homeo. Med.—H. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 8 | .... | .... | .... | .... | .... | .... | 25 |
| 26 | University of Kansas School of Medicine | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 137 | .... | .... | .... | .... | .... | 26 |
| 27 | University of Louisville Medical Department | .... | .... | 2 | .... | 1 | .... | .... | .... | 3 | 1 | 1 | 5 | 13 | .... | .... | 39 | .... | .... | .... | 1 | 27 |
| 28 | Tulane University of Louisiana School of Medicine | 29 | 1 | 12 | .... | .... | .... | .... | .... | 9 | 11 | .... | .... | 2 | .... | 3 | 1 | 117 | .... | .... | .... | 28 |
| 29 | Bowdoin Medical School | .... | .... | .... | .... | .... | 3 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 36 | .... | 7 | 29 |
| 30 | Johns Hopkins University Medical Department | 5 | .... | 3 | 9 | 6 | 12 | .... | 3 | 1 | 10 | .... | 6 | 7 | 4 | 1 | 7 | 1 | 3 | 64 | 12 | 30 |
| 31 | Univ. of Maryland Sch. of Med. and Coll. of P. & S. | 3 | .... | .... | .... | .... | 7 | 6 | 3 | 3 | 1 | .... | .... | .... | .... | .... | 3 | .... | .... | 98 | 5 | 31 |
| 32 | Boston University School of Medicine | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 1 | .... | .... | .... | .... | 1 | .... | .... | 3 | .... | 27 | 32 |
| 33 | College of Physicians and Surgeons, Boston† | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 47 | 33 |
| 34 | Medical School of Harvard University | 1 | 1 | 1 | 5 | 8 | 15 | .... | 1 | 3 | 9 | 2 | 8 | 7 | 5 | 1 | .... | .... | 15 | .... | 155 | 34 |
| 35 | Middlesex College of Medicine and Surgery.—N.* | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 84 | 35 |
| 36 | Tufts College Medical School | .... | .... | .... | .... | .... | 13 | .... | .... | .... | 1 | .... | 1 | .... | .... | 1 | .... | .... | 6 | .... | 274 | 36 |
| 37 | University of Michigan Medical School | 1 | 1 | .... | 2 | .... | .... | .... | 3 | 1 | 1 | 2 | 10 | 13 | 3 | 1 | .... | .... | .... | 1 | 1 | 37 |
| 38 | University of Michigan Homeo. Medical School.—H. | .... | .... | .... | 2 | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | 38 |
| 39 | Detroit College of Medicine and Surgery | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | 39 |
| 40 | University of Minnesota Medical School | .... | .... | .... | 2 | .... | .... | .... | .... | .... | .... | 1 | 2 | .... | 11 | .... | .... | .... | .... | 1 | .... | 40 |
| 41 | University of Mississippi School of Medicine | 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | 41 |
| 42 | University of Missouri School of Medicine* | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 42 |
| 43 | Eclectic Medical University, Kansas City.—E.* | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 12 | .... | .... | .... | .... | .... | 43 |
| 44 | Kansas City College of Medicine and Surgery.—N.* | .... | .... | 9 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 25 | .... | .... | .... | .... | .... | 44 |
| 45 | Kansas City Univ. of Physicians and Surgeons.—N. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 45 |
| 46 | National University of Arts and Sciences Med. Dept. | .... | .... | 2 | 1 | .... | .... | .... | .... | .... | .... | 1 | 8 | .... | 1 | .... | 2 | .... | .... | .... | .... | 46 |
| 47 | St. Louis College of Physicians and Surgeons* | .... | .... | 2 | .... | .... | .... | .... | .... | .... | .... | .... | 10 | .... | .... | .... | .... | .... | .... | .... | .... | 47 |
| 48 | St. Louis University School of Medicine | 1 | 1 | .... | 12 | 1 | .... | .... | .... | .... | 1 | .... | 46 | 8 | 25 | 16 | 1 | 2 | .... | .... | .... | 48 |
| 49 | Washington University Medical School | .... | .... | 1 | .... | 4 | .... | .... | .... | .... | .... | 1 | 16 | 2 | 3 | 9 | .... | .... | .... | .... | .... | 49 |
| 50 | Lincoln Medical College.—E.† | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 4 | .... | .... | .... | .... | .... | .... | 50 |
| 51 | John A. Creighton Medical College | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 14 | 4 | .... | .... | .... | .... | .... | 51 |
| 52 | University of Nebraska College of Medicine | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 1 | .... | .... | 9 | 2 | .... | .... | .... | .... | .... | 52 |
| 53 | Dartmouth Medical School | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 1 | .... | 8 | 53 |
| 54 | Albany Medical College | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 5 | 54 |
| 55 | University of Buffalo Department of Medicine | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 55 |
| 56 | Columbia University College of Phys. and Surgs. | 1 | 1 | .... | 2 | 33 | .... | .... | 1 | 13 | 2 | 1 | 2 | .... | .... | .... | .... | .... | 1 | .... | 11 | 56 |
| 57 | Cornell University Medical College | .... | .... | .... | 3 | 5 | .... | .... | .... | 2 | .... | 1 | 1 | 1 | 1 | .... | .... | .... | 1 | .... | 1 | 57 |
| 58 | Fordham University School of Medicine | .... | .... | .... | .... | 18 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 6 | 58 |
| 59 | Long Island College Hospital | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 3 | 59 |
| 60 | New York Homeo. Med. Coll. and Flower Hosp.—H.* | .... | .... | .... | 1 | 5 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 60 |
| 61 | New York Medical College and Hosp. for Women.—H. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 61 |
| 62 | University and Bellevue Hospital Medical College | .... | .... | .... | 2 | .... | 13 | .... | .... | * | 1 | .... | 1 | .... | 1 | 1 | .... | .... | .... | .... | 2 | 62 |
| 63 | Syracuse University College of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 63 |
| 64 | University of North Carolina School of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | 2 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 64 |
| 65 | Leonard Medical School | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 65 |
| 66 | Wake Forest College School of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 1 | 66 |
| 67 | University of North Dakota School of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 67 |
| 68 | Eclectic Medical College, Cincinnati.—E. | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 4 | 4 | 1 | 1 | 9 | .... | 1 | .... | .... | 68 |
| 69 | University of Cincinnati College of Medicine | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 2 | 7 | .... | .... | 17 | .... | .... | .... | .... | 69 |
| 70 | Western Reserve University School of Medicine | .... | .... | .... | .... | 1 | .... | .... | 1 | .... | .... | 1 | 3 | 4 | 2 | 1 | 1 | .... | .... | .... | .... | 70 |
| 71 | Ohio State University College of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | .... | .... | 1 | .... | .... | .... | .... | 71 |
| 72 | Ohio State University College of Homeo. Med.—H. | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 1 | .... | .... | .... | .... | 72 |
| 73 | University of Oklahoma School of Medicine | 1 | .... | 1 | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | 73 |
| 74 | University of Oregon Medical School | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 74 |
| 75 | Hahnemann Med. Coll. & Hosp. of Philadelphia.—H. | .... | .... | .... | .... | .... | 2 | 4 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 3 | 1 | 75 |
| 76 | Jefferson Medical College of Philadelphia | 1 | .... | 1 | 2 | 2 | 15 | 8 | .... | 1 | 1 | 3 | 3 | 1 | 1 | 1 | .... | 2 | 2 | 11 | 76 |
| 77 | Temple University Department of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 77 |
| 78 | University of Pennsylvania School of Medicine | 1 | .... | .... | 5 | 1 | 6 | 5 | 1 | 1 | 3 | 1 | 5 | 3 | 6 | 1 | 1 | .... | 3 | 5 | 4 | 78 |
| 79 | Woman's Medical College of Pennsylvania | 1 | .... | .... | 2 | .... | 3 | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 1 | 79 |
| 80 | University of Pittsburgh School of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 1 | 80 |
| 81 | Medical College of the State of South Carolina | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 81 |
| 82 | University of South Dakota College of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | 82 |
| 83 | University of Tennessee College of Medicine | 1 | .... | 1 | .... | .... | .... | .... | .... | 2 | .... | 1 | .... | .... | .... | 1 | 1 | 2 | .... | .... | 1 | 83 |
| 84 | University of West Tennessee Coll. of Med. and Surg. | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | 3 | .... | 1 | .... | .... | .... | .... | 2 | .... | .... | .... | 84 |
| 85 | Meharry Medical College | 13 | .... | 11 | .... | .... | .... | .... | 1 | 3 | 23 | .... | 10 | 1 | .... | 1 | 5 | 10 | .... | .... | .... | 85 |
| 86 | Vanderbilt University School of Medicine | 12 | .... | 5 | 2 | 1 | .... | .... | .... | 4 | .... | .... | 2 | .... | .... | .... | 3 | 4 | .... | .... | .... | 86 |
| 87 | Baylor University College of Medicine | .... | .... | .... | 1 | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | 87 |
| 88 | Fort Worth School of Medicine* | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | 88 |
| 89 | University of Texas Department of Medicine | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | 89 |
| 90 | University of Utah School of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 90 |
| 91 | University of Vermont College of Medicine | .... | .... | .... | .... | .... | 13 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 3 | .... | 11 | 91 |
| 92 | Medical College of Virginia | .... | .... | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 92 |
| 93 | University of Virginia Department of Medicine | 3 | .... | .... | .... | .... | 1 | 1 | 2 | 1 | 2 | .... | .... | 1 | .... | .... | 2 | 1 | .... | 2 | .... | 93 |
| 94 | West Virginia University School of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 94 |
| 95 | University of Wisconsin Medical School | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 9 | .... | 1 | 1 | 2 | .... | .... | .... | .... | 95 |
| 96 | Marquette University School of Medicine | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 96 |
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | |

E.—Eclectic; H.—Homeopathic; N.—Nondescript. * Figures exact; distribution approximate. † Figures and distribution approximate.

| Marginal Number | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | Totals | Marginal Number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Michigan....427 | Minnesota....342 | Mississippi....119 | Missouri....585 | Montana....87 | Nebraska....267 | Nevada....5 | New Hampshire..53 | New Jersey....346 | New Mexico....11 | New York....2,232 | North Carolina.287 | North Dakota...65 | Ohio....534 | Oklahoma....98 | Oregon....91 | Pennsylvania..1,010 | Rhode Island...73 | South Carolina.128 | South Dakota...74 | Tennessee....214 | Texas....446 | Utah....106 | Vermont....69 | Virginia....264 | Washington....97 | West Virginia...127 | Wisconsin....307 | Wyoming....4 | Philippines, etc.113 | Foreign....200 | 13,620 | |
| 1 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | 1 | .... | .... | 2 | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 44 | 1 |
| 2 | .... | .... | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 52 | 2 |
| 3 | 4 | 2 | .... | .... | 1 | 1 | .... | .... | .... | 1 | 1 | .... | .... | .... | 1 | 1 | .... | .... | .... | 1 | 3 | .... | .... | .... | .... | 4 | .... | 2 | .... | .... | 6 | 62 | 3 |
| 4 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 2 | .... | .... | .... | 92 | 4 |
| 5 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 17 | 5 |
| 6 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 1 | .... | .... | .... | .... | 5 | 56 | 6 |
| 7 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | 11 | 7 |
| 8 | .... | .... | .... | 1 | .... | .... | 2 | .... | .... | .... | .... | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... | .... | 2 | 1 | .... | 5 | .... | 1 | .... | .... | 3 | 82 | 8 |
| 9 | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 6 | .... | 1 | .... | .... | .... | .... | 3 | .... | .... | .... | .... | 1 | .... | .... | 2 | 150 | 9 |
| 10 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 77 | 10 |
| 11 | .... | 1 | .... | .... | .... | .... | .... | 2 | .... | .... | 7 | 1 | .... | .... | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... | 3 | 71 | 11 |
| 12 | 1 | 1 | .... | 1 | .... | .... | .... | .... | 1 | .... | 7 | .... | .... | 3 | .... | .... | 12 | .... | .... | .... | 2 | 2 | .... | 1 | 2 | .... | 1 | .... | .... | 3 | .... | 69 | 12 |
| 13 | 1 | 1 | .... | 1 | .... | 1 | .... | 1 | .... | 1 | 7 | 2 | .... | 3 | .... | .... | 13 | .... | 1 | .... | 2 | 2 | 1 | 1 | 9 | .... | .... | 1 | .... | 4 | 7 | 107 | 13 |
| 14 | .... | .... | .... | 2 | .... | .... | .... | .... | 5 | .... | 3 | 9 | .... | 1 | 2 | .... | 9 | .... | 5 | .... | 2 | 6 | .... | .... | 12 | .... | 2 | .... | .... | 3 | 12 | 114 | 14 |
| 15 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 1 | 5 | .... | .... | .... | .... | .... | .... | 2 | .... | 2 | 1 | .... | .... | .... | .... | .... | .... | .... | 2 | 2 | 128 | 15 |
| 16 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 3 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 70 | 16 |
| 17 | 13 | 7 | 1 | 8 | .... | 2 | .... | .... | 2 | .... | 16 | 2 | 2 | 9 | .... | .... | 11 | 1 | .... | 2 | 8 | 1 | 2 | .... | 1 | 3 | 9 | 15 | .... | 16 | 14 | 448 | 17 |
| 18 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 95 | 18 |
| 19 | 5 | 3 | .... | .... | .... | 1 | .... | .... | .... | .... | 1 | .... | .... | 2 | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 1 | .... | .... | 2 | .... | .... | 3 | 51 | 19 |
| 20 | 10 | 13 | 2 | 8 | 1 | 8 | .... | 1 | 1 | 1 | .... | .... | 10 | 6 | 1 | 1 | 1 | .... | .... | 6 | .... | 1 | 1 | .... | 1 | 10 | .... | 19 | .... | 3 | 281 | 20 |
| 21 | 19 | 22 | 1 | 15 | 5 | 15 | 2 | .... | .... | .... | 2 | .... | 12 | 17 | 3 | 6 | 2 | .... | 1 | 19 | 1 | 8 | 15 | .... | .... | 7 | .... | 27 | 1 | 5 | 7 | 550 | 21 |
| 22 | 5 | 13 | .... | 4 | 1 | 2 | .... | .... | .... | .... | 4 | .... | 2 | 3 | 2 | .... | 1 | .... | .... | 1 | .... | 1 | 5 | .... | .... | 4 | .... | 12 | .... | .... | 6 | 270 | 22 |
| 23 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 1 | 1 | 215 | 23 |
| 24 | .... | 3 | .... | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 1 | .... | 1 | .... | .... | 4 | 189 | 24 |
| 25 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 9 | 25 |
| 26 | .... | .... | .... | 6 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 145 | 26 |
| 27 | .... | 1 | .... | 6 | 1 | .... | .... | .... | 1 | .... | 1 | .... | .... | 4 | .... | .... | 1 | .... | .... | .... | 5 | 4 | .... | .... | 2 | 1 | 5 | 1 | .... | .... | .... | 99 | 27 |
| 28 | .... | 1 | 30 | 4 | .... | .... | .... | .... | .... | .... | 1 | 6 | .... | .... | 1 | .... | 1 | .... | .... | 2 | 1 | 1 | 32 | .... | .... | 2 | .... | 1 | .... | 4 | 4 | 275 | 28 |
| 29 | .... | .... | .... | .... | .... | .... | .... | 4 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 3 | 54 | 29 |
| 30 | 4 | 1 | .... | 4 | 2 | 3 | .... | .... | 11 | 1 | 25 | 10 | 5 | 33 | .... | 2 | 33 | 6 | 7 | 1 | 11 | 9 | 1 | .... | 29 | 4 | 4 | 7 | .... | 8 | 375 | 30 |
| 31 | .... | .... | .... | 1 | .... | .... | .... | 1 | 10 | .... | 12 | 32 | .... | 5 | .... | .... | 17 | 2 | 7 | .... | .... | .... | .... | .... | 14 | .... | 17 | .... | .... | 17 | 7 | 266 | 31 |
| 32 | .... | .... | .... | .... | .... | .... | .... | 3 | .... | .... | 2 | 1 | .... | 1 | 1 | .... | 5 | 2 | 2 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 2 | 5 | 58 | 32 |
| 33 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 47 | 33 |
| 34 | 2 | 6 | .... | 4 | .... | 2 | .... | 6 | 5 | .... | 28 | 5 | .... | 10 | 2 | 3 | 11 | 19 | 3 | .... | 1 | 6 | 4 | .... | 1 | 3 | .... | 9 | 1 | .... | 18 | 384 | 34 |
| 35 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 84 | 35 |
| 36 | 1 | 1 | .... | .... | .... | .... | .... | 15 | 1 | .... | 9 | .... | .... | 2 | .... | .... | 4 | 28 | .... | .... | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | 8 | 5 | 372 | 36 |
| 37 | 172 | 4 | .... | 1 | 3 | 1 | .... | .... | 2 | .... | 28 | .... | .... | 34 | 1 | .... | 16 | 1 | .... | 2 | 2 | 1 | 1 | 1 | .... | 5 | 1 | 1 | .... | 9 | 13 | 339 | 37 |
| 38 | 22 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 3 | .... | 1 | 3 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | 36 | 38 |
| 39 | 129 | 1 | .... | .... | .... | .... | .... | .... | 1 | .... | 2 | .... | .... | 5 | .... | .... | 3 | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 11 | 166 | 39 |
| 40 | 3 | 228 | .... | .... | 2 | .... | .... | .... | .... | .... | 3 | .... | 8 | .... | .... | .... | .... | .... | .... | 6 | .... | .... | .... | .... | 1 | 6 | .... | 3 | .... | .... | 3 | 280 | 40 |
| 41 | .... | .... | 45 | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | 3 | 2 | 57 | 41 |
| 42 | .... | .... | .... | 75 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 78 | 42 |
| 43 | .... | .... | .... | 22 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 34 | 43 |
| 44 | .... | .... | .... | 62 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 96 | 44 |
| 45 | .... | .... | .... | 45 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 45 | 45 |
| 46 | .... | .... | .... | 16 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | .... | .... | .... | .... | .... | 2 | 37 | 46 |
| 47 | .... | .... | .... | 60 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 72 | 47 |
| 48 | 6 | 4 | .... | 88 | 3 | 2 | .... | .... | .... | .... | 3 | .... | 1 | 28 | 3 | .... | 1 | .... | .... | 1 | .... | 4 | 1 | .... | .... | 4 | .... | 9 | .... | 2 | 2 | 276 | 48 |
| 49 | 1 | 3 | 1 | 70 | .... | .... | .... | .... | .... | 1 | .... | .... | 2 | 1 | 2 | 1 | .... | .... | .... | 1 | .... | 3 | 3 | .... | .... | .... | 1 | 6 | .... | .... | 4 | 136 | 49 |
| 50 | .... | .... | .... | .... | .... | 12 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 16 | 50 |
| 51 | .... | 4 | .... | 1 | 11 | 43 | .... | .... | .... | .... | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | 6 | .... | .... | 1 | .... | .... | 1 | .... | 1 | .... | 1 | 1 | 90 | 51 |
| 52 | 1 | .... | .... | 1 | .... | 156 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 4 | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 3 | 180 | 52 |
| 53 | .... | .... | .... | .... | .... | .... | .... | 11 | 1 | .... | 6 | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 31 | 53 |
| 54 | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 72 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 81 | 54 |
| 55 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 204 | .... | .... | 1 | .... | .... | 5 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 215 | 55 |
| 56 | 2 | 2 | .... | 3 | .... | .... | .... | 5 | 70 | 3 | 366 | 6 | .... | 5 | .... | 2 | 6 | 3 | 3 | .... | 2 | 2 | 14 | 2 | 3 | 1 | 1 | 11 | .... | .... | 9 | 589 | 56 |
| 57 | .... | .... | .... | .... | .... | 2 | .... | .... | 21 | .... | 132 | .... | .... | 2 | .... | .... | 3 | 1 | .... | .... | .... | .... | .... | 2 | 1 | .... | .... | 1 | .... | .... | 5 | 186 | 57 |
| 58 | .... | .... | .... | .... | .... | .... | .... | .... | 29 | .... | 239 | .... | .... | .... | .... | .... | 2 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | 297 | 58 |
| 59 | .... | .... | .... | .... | .... | .... | .... | .... | 20 | .... | 312 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | 1 | .... | .... | 6 | 345 | 59 |
| 60 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 24 | .... | 130 | .... | .... | .... | .... | 3 | .... | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | 3 | 170 | 60 |
| 61 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 27 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 27 | 61 |
| 62 | .... | .... | .... | 1 | .... | .... | .... | .... | 49 | .... | 396 | 3 | .... | 2 | .... | 1 | 3 | 3 | .... | .... | 2 | .... | 2 | 1 | 1 | .... | .... | .... | .... | .... | 5 | 491 | 62 |
| 63 | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 116 | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 2 | .... | .... | .... | .... | 2 | 3 | 125 | 63 |
| 64 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 49 | .... | .... | .... | .... | .... | .... | 4 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 57 | 64 |
| 65 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 5 | 65 |
| 66 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 30 | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | 1 | 35 | 66 |
| 67 | .... | 8 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 19 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 2 | 30 | 67 |
| 68 | 1 | .... | .... | .... | .... | 6 | .... | .... | .... | .... | 1 | .... | .... | 47 | 1 | .... | 2 | .... | .... | .... | 1 | .... | .... | .... | .... | 1 | 7 | .... | .... | .... | .... | 88 | 68 |
| 69 | 3 | 1 | .... | 1 | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 89 | .... | .... | 4 | .... | .... | .... | .... | 1 | .... | .... | 2 | 1 | 7 | 3 | .... | 1 | 2 | 142 | 69 |
| 70 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 139 | .... | .... | 9 | .... | .... | 2 | .... | .... | 3 | .... | 1 | 1 | 4 | .... | .... | .... | 6 | 181 | 70 |
| 71 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 116 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 3 | 1 | .... | .... | .... | 124 | 71 |
| 72 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 32 | .... | .... | 4 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 38 | 72 |
| 73 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | 68 | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 2 | 76 | 73 |
| 74 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 60 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 15 | .... | .... | .... | .... | 75 | 74 |
| 75 | .... | .... | .... | 1 | .... | .... | .... | .... | 14 | .... | 5 | .... | .... | 4 | .... | .... | 100 | .... | .... | .... | .... | .... | .... | .... | 1 | .... | 1 | .... | .... | .... | 4 | 140 | 75 |
| 76 | 1 | 5 | 3 | 7 | 4 | 2 | .... | .... | 26 | .... | 11 | 44 | 1 | 13 | .... | 1 | 213 | .... | 10 | .... | 3 | 4 | 8 | 1 | 4 | 7 | 10 | 8 | .... | 15 | 10 | 466 | 76 |
| 77 | .... | .... | .... | 1 | .... | .... | .... | .... | 8 | .... | 6 | .... | .... | 1 | .... | .... | 80 | .... | .... | .... | .... | .... | .... | .... | 2 | .... | .... | .... | .... | 2 | 4 | 106 | 77 |
| 78 | 2 | 1 | 4 | 1 | 2 | 3 | .... | .... | 31 | .... | 10 | 27 | .... | 1 | .... | 2 | 268 | .... | 4 | .... | 7 | 4 | 7 | .... | 9 | 10 | 6 | 3 | .... | 4 | 21 | 479 | 78 |
| 79 | .... | .... | .... | .... | .... | .... | .... | .... | 5 | .... | 6 | 6 | .... | .... | .... | .... | 15 | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 1 | .... | 1 | .... | 43 | 79 |
| 80 | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 5 | .... | .... | 138 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 147 | 80 |
| 81 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 52 | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 55 | 81 |
| 82 | 2 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 15 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 19 | 82 |
| 83 | .... | .... | 6 | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | 58 | 4 | .... | .... | .... | .... | 1 | 3 | .... | 1 | .... | 84 | 83 |
| 84 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | 3 | .... | .... | .... | .... | .... | 4 | 1 | .... | .... | 1 | .... | 1 | .... | .... | .... | 1 | 21 | 84 |
| 85 | 1 | .... | 14 | 5 | .... | 1 | .... | .... | .... | .... | 3 | 7 | .... | 1 | 3 | .... | 1 | .... | 12 | .... | 21 | 31 | .... | .... | 8 | .... | .... | .... | .... | .... | 20 | 206 | 85 |
| 86 | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | 2 | .... | .... | .... | 3 | .... | 65 | 6 | .... | .... | 2 | .... | .... | .... | .... | .... | 1 | 115 | 86 |
| 87 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | 56 | 1 | .... | .... | .... | .... | .... | .... | 3 | 2 | 68 | 87 |
| 88 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 55 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 56 | 88 |
| 89 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | 1 | .... | .... | .... | 1 | 196 | .... | .... | .... | .... | .... | 1 | .... | 1 | 2 | 209 | 89 |
| 90 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 29 | .... | .... | .... | .... | .... | .... | .... | 3 | 34 | 90 |
| 91 | .... | .... | .... | .... | .... | .... | .... | 4 | 6 | .... | 14 | .... | .... | 1 | .... | .... | 2 | 3 | .... | .... | 1 | .... | .... | 43 | .... | .... | .... | .... | .... | 1 | 2 | 105 | 91 |
| 92 | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | 1 | 30 | .... | 2 | .... | .... | 1 | .... | 3 | .... | 1 | .... | .... | .... | 90 | .... | 5 | .... | .... | 1 | 1 | 139 | 92 |
| 93 | .... | .... | 6 | .... | .... | .... | .... | .... | .... | .... | 1 | 5 | .... | .... | .... | .... | 3 | .... | 3 | .... | 7 | 1 | .... | .... | 55 | .... | 2 | .... | .... | .... | 1 | 100 | 93 |
| 94 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | 34 | .... | .... | .... | .... | 36 | 94 |
| 95 | 1 | .... | .... | 2 | 1 | .... | .... | .... | .... | .... | 1 | .... | 1 | 2 | .... | .... | .... | .... | .... | 1 | 1 | .... | .... | .... | .... | .... | .... | 94 | .... | 1 | 1 | 120 | 95 |
| 96 | 1 | 3 | .... | .... | .... | 1 | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | .... | 62 | .... | .... | .... | 67 | 96 |
| | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | | |

| Name of College | Enrolled During 1917-18 | | | | |
|---|---|---|---|---|---|
| | 1st Yr. | 2d Yr. | 3d Yr. | 4th Yr. | Total |
| University of Alabama School of Medicine | 24 | 8 | 3 | 9 | 44 |
| University of Arkansas Medical Department | 17 | 6 | 6 | 23 | 52 |
| College of Medical Evangelists | 22 | 14 | 4 | 22 | 62 |
| College of Phys. and Surgs., Los Angeles | 24 | 8 | 32 | 28 | 92 |
| Oakland College of Medicine and Surgery | 6 | 4 | 3 | 4 | 17 |
| College of Phys. and Surgs. of San Francisco | 8 | 16 | 6 | 26 | 56 |
| Hahnemann Medical College of the Pacific | ... | ... | ... | 11 | 11 |
| Leland Stanford Junior Univ. School of Med. | 22 | 14 | 25 | 21 | 82 |
| University of California Medical School | 74 | 34 | 20 | 22 | 150 |
| University of Colorado School of Medicine | 25 | 21 | 22 | 9 | 77 |
| Yale University School of Medicine | 24 | 25 | 14 | 8 | 71 |
| Georgetown University School of Medicine | 24 | 17 | 12 | 16 | 69 |
| George Washington University Medical School | 42 | 34 | 17 | 14 | 107 |
| Howard University School of Medicine | 22 | 34 | 27 | 31 | 114 |
| Emory University School of Medicine | 48 | 28 | 25 | 27 | 128 |
| University of Georgia Medical Department | 42 | 15 | 7 | 6 | 70 |
| Chicago College of M. and S. (Loyola Univ.) | 125 | 86 | 84 | 153 | 448 |
| Chicago Hospital College of Medicine | 23 | 23 | ... | 49 | 95 |
| Hahnemann Med. Coll. & Hosp. of Chicago.H. | 7 | 8 | 19 | 17 | 51 |
| Northwestern University Medical School | 59 | 61 | 95 | 66 | 281 |
| Rush Medical College (University of Chicago) | 122 | 123 | 155 | 150 | 550 |
| University of Illinois College of Medicine | 98 | 91 | 51 | 30 | 270 |
| Indiana University School of Medicine | 83 | 63 | 32 | 37 | 215 |
| State University of Iowa College of Medicine | 60 | 56 | 46 | 27 | 189 |
| State Univ. of Iowa Coll. of Homeo. Med.—H. | 3 | 2 | 1 | 3 | 9 |
| University of Kansas School of Medicine | 69 | 38 | 21 | 17 | 145 |
| University of Louisville Medical Department | 47 | 18 | 18 | 16 | 99 |
| Tulane University of Louisiana School of Med. | 67 | 78 | 69 | 61 | 275 |
| Bowdoin Medical School | 9 | 9 | 18 | 18 | 54 |
| Johns Hopkins University Medical Department | 94 | 94 | 98 | 89 | 375 |
| Univ. of Md. Sch. of Med. & Coll. of P. & S. | 95 | 64 | 46 | 61 | 266 |
| Boston University School of Medicine | 16 | 15 | 9 | 18 | 58 |
| College of Physicians and Surgeons, Boston* | 12 | 13 | 6 | 16 | 47 |
| Medical School of Harvard University | 94 | 98 | 98 | 94 | 384 |
| Tufts College Medical School | 113 | 97 | 96 | 66 | 372 |
| Middlesex College of Medicine and Surgery.—N. | 27 | 21 | 11 | 25 | 84 |
| University of Michigan Medical School | 118 | 94 | 60 | 67 | 339 |
| University of Michigan Homeo. Med. Sch.—H. | 5 | 3 | 8 | 20 | 36 |
| Detroit College of Medicine and Surgery | 63 | 49 | 33 | 21 | 166 |
| University of Minnesota Medical School | 80 | 78 | 62 | 60 | 280 |
| University of Mississippi School of Medicine | 26 | 31 | ... | ... | 57 |
| University of Missouri School of Medicine | 43 | 35 | ... | ... | 78 |
| Eclectic Medical University, Kansas City.—E. | 13 | 7 | 4 | 10 | 34 |
| Kansas City Coll. of Medicine and Surgery.—N. | 26 | 20 | 23 | 27 | 96 |
| Kansas City Univ. of Phys. and Surgs.—N. | 8 | 13 | 12 | 12 | 45 |
| National Univ. of Arts and Sciences Med. Dept. | ... | ... | ... | 37 | 37 |
| St. Louis College of Physicians and Surgeons | 8 | 13 | 11 | 40 | 72 |
| St. Louis University School of Medicine | 87 | 74 | 60 | 55 | 276 |
| Washington University Medical School | 28 | 27 | 49 | 32 | 136 |
| Lincoln Medical College.—E.* | 3 | 4 | 6 | 3 | 16 |
| John A. Creighton Medical College | 30 | 23 | 21 | 16 | 90 |
| University of Nebraska College of Medicine | 69 | 49 | 32 | 30 | 180 |
| Dartmouth Medical School | 19 | 12 | ... | ... | 31 |
| Albany Medical College | 33 | 22 | 13 | 13 | 81 |
| University of Buffalo Department of Medicine | 85 | 62 | 40 | 28 | 215 |
| Columbia University Coll. of Phys. and Surgs. | 213 | 114 | 148 | 114 | 589 |
| Cornell University Medical College | 70 | 55 | 29 | 32 | 186 |
| Fordham University School of Medicine | 97 | 73 | 64 | 63 | 297 |
| Long Island College Hospital | 125 | 108 | 72 | 40 | 345 |
| N. Y. Homeo. Med. Coll. and Flower Hosp.—H. | 50 | 51 | 40 | 29 | 170 |
| New York Med. Coll. & Hosp. for Women.—H. | 4 | 5 | 14 | 4 | 27 |
| University and Bellevue Hospital Med. College | 189 | 125 | 87 | 90 | 491 |
| Syracuse University College of Medicine | 38 | 40 | 23 | 24 | 125 |
| University of North Carolina School of Med. | 34 | 23 | ... | ... | 57 |
| Leonard Medical School | 1 | 4 | ... | ... | 5 |
| Wake Forest College School of Medicine | 21 | 14 | ... | ... | 35 |
| University of North Dakota School of Medicine | 18 | 12 | ... | ... | 30 |
| Eclectic Medical College, Cincinnati.—E. | 15 | 23 | 28 | 22 | 88 |
| University of Cincinnati College of Medicine | 51 | 39 | 28 | 24 | 142 |
| Western Reserve University School of Medicine | 51 | 44 | 42 | 44 | 181 |
| Ohio State University College of Medicine | 52 | 29 | 19 | 24 | 124 |
| Ohio State Univ. College of Homeo. Med.—H. | 11 | 4 | 7 | 16 | 38 |
| University of Oklahoma School of Medicine | 25 | 21 | 17 | 13 | 76 |
| University of Oregon Medical School | 23 | 15 | 16 | 21 | 75 |
| Hahnemann Med. Coll. and Hosp. of Pa.—H. | 61 | 36 | 31 | 12 | 140 |
| Jefferson Medical College of Philadelphia | 70 | 148 | 146 | 102 | 466 |
| Temple University Department of Medicine | 26 | 23 | 28 | 29 | 106 |
| University of Pennsylvania School of Medicine | 121 | 111 | 126 | 121 | 479 |
| Woman's Medical College of Pennsylvania | 18 | 10 | 7 | 8 | 43 |
| University of Pittsburgh School of Medicine | 51 | 42 | 28 | 26 | 147 |
| Medical College of the State of South Carolina | 19 | 15 | 11 | 10 | 55 |
| University of South Dakota College of Med. | 10 | 9 | ... | ... | 19 |
| University of Tennessee College of Medicine | 29 | 17 | 19 | 19 | 84 |
| Univ. of West Tenn. College of Med. and Surg. | 7 | 3 | 3 | 8 | 21 |
| Meharry Medical College | 45 | 37 | 40 | 84 | 206 |
| Vanderbilt University School of Medicine | 45 | 24 | 23 | 23 | 115 |
| Baylor University College of Medicine | 25 | 18 | 12 | 13 | 68 |
| Fort Worth School of Medicine | 16 | 14 | 14 | 12 | 56 |
| University of Texas Department of Medicine | 41 | 73 | 54 | 41 | 209 |
| University of Utah School of Medicine | 15 | 19 | ... | ... | 34 |
| University of Vermont College of Medicine | 30 | 23 | 21 | 22 | 105 |
| Medical College of Virginia | 33 | 30 | 24 | 52 | 139 |
| University of Virginia Department of Medicine | 27 | 23 | 27 | 23 | 100 |
| West Virginia University School of Medicine | 15 | 21 | ... | ... | 36 |
| University of Wisconsin Medical School | 63 | 57 | ... | ... | 120 |
| Marquette University School of Medicine | 28 | 17 | 15 | 7 | 67 |
| Totals for 1918 | 4283 | 3521 | 2803 | 2933 | 13630 |
| Totals for 1917 | 4107 | 3117 | 2868 | 3674 | 13764 |
| Totals for 1916 | 3582 | 3094 | 3559 | 3727 | 14022 |

* Figures approximate.

*(Continued from page 539)*

were in attendance at the two medical colleges for women, while 511 (87.9 per cent.) were matriculated in the sixty coeducational colleges. From the two women's colleges there were 12 graduates, while 94 secured their degrees from coeducational colleges. This increase of women students in coeducational colleges is not surprising, since in recent years some of the largest and oldest medical schools, as Columbia, Tulane, the University of Pennsylvania and Harvard (and McGill University in Canada), have thrown open their doors to women.

### NUMBER OF COLLEGES

Since June 30, 1917, two new medical colleges were reported, while eight colleges (mentioned on page 544) were closed by merger or otherwise. The present total number of medical colleges is ninety—six less than last year. Of the ninety colleges, 79 are nonsectarian (regular), 6 are homeopathic, 2 are eclectic and 3 are nondescript. Two of the nondescript and one of the eclectic colleges are not recognized by the licensing boards of the states (Missouri and Nebraska) in which they are located.

### LENGTH OF TERMS

During the last eighteen years there has been a decided lengthening of college terms. This has reference to the weeks of actual work exclusive of holidays. Prior to 1904 the majority of colleges had sessions of twenty-eight weeks or less. For three years no colleges have had sessions shorter than twenty-nine weeks, and this year only two colleges reported sessions of thirty weeks Sessions of from thirty-three to thirty-six weeks were reported by fifty-nine, or 65.6 per cent., of all colleges.

### TUITION AND OTHER FEES

Attention is called to Table 1, on page 536, to the amount charged by the various medical colleges per annum for tuition, matriculation, laboratory and grad-

uation fees for each student. In Table 10, eighty-nine of the ninety colleges—from one Class C college the figures were not obtained—have been grouped according to the amount of fees charged and according to their classification by the Council on Medical Education in Classes A, B and C. Sixteen colleges charge fees of $100 or less per year; forty-three between $100 and $175, and thirty charge above $175. Of the sixteen colleges charging $100 or less, twelve (75 per cent.) are listed among Class A (acceptable) colleges[2] by the Council on Medical Education; three are Class B colleges and one is rated in Class C. Among the twelve Class A colleges having these low fees are the schools of medicine of the state universities of Colorado, Iowa, Michigan, Mississippi, Missouri, North Dakota, South Dakota, Texas and Utah. On the other hand, five colleges listed by the Council in Class C charge fees of from $100 to $175 per year for each student, and two exact fees between $175 and $250. Diplomas from Class C colleges are reported as not recognized by thirty-two state licensing boards.[3] No intelligent student would knowingly spend his time and money in a low-grade college, the diplomas of which are not recognized by many states, when in the same time and for even less money he could attend one of the best-equipped colleges, the diplomas of which are recognized everywhere. Although forty-two colleges listed in Class A charged fees ranging from $150 to $275 per year for each student, the actual expense for teaching that student in these colleges amounts to from two or three to several times these sums. In fact, accurate data secured from eighty-two medical colleges show that the average amount received each year from the individual student was $150, while the average amount actually expended in the training of that student for a year was $419! And the latter sum is much larger in the higher grade colleges since there were several colleges among the eighty-two which still apparently made profits from teaching medical students or which paid all expenses, including rents, or even erected new buildings out of the income from students' fees!

TABLE 8.—MEDICAL COLLEGES

| Year | Non-sectarian | Homeopathic | Eclectic | Physio-Med. | Nondescript | Total |
|---|---|---|---|---|---|---|
| 1850 | 44 | 3 | 4 | 1 | .. | 52 |
| 1860 | 53 | 6 | 4 | 2 | .. | 65 |
| 1870 | 60 | 8 | 5 | 2 | .. | 75 |
| 1880 | 76 | 14 | 8 | 2 | .. | 100 |
| 1890 | 106 | 16 | 9 | 2 | .. | 133 |
| 1900 | 126 | 22 | 9 | 2 | 1 | 160 |
| 1901 | 125 | 22 | 10 | 2 | 1 | 160 |
| 1902 | 126 | 20 | 9 | 3 | 2 | 160 |
| 1903 | 126 | 20 | 9 | *3 | 2 | 160 |
| 1904 | 127 | 19 | 9 | 3 | 2 | 160 |
| 1905 | 125 | 19 | 9 | 3 | 2 | 158 |
| 1906 | 130 | 19 | 8 | 3 | 2 | 162 |
| 1907 | 127 | 18 | 9 | 3 | 2 | 159 |
| 1908 | 120 | 18 | 9 | 2 | 2 | 151 |
| 1909 | 115 | 15 | 8 | 1 | 1 | 140 |
| 1910 | 109 | 12 | 8 | 1 | 1 | 131 |
| 1911 | 103 | 12 | 7 | .. | .. | 122 |
| 1912 | 101 | 11 | 6 | .. | .. | 118 |
| 1913 | 92 | 10 | 5 | .. | .. | 107 |
| 1914 | 87 | 10 | 5 | .. | .. | 102 |
| 1915 | 83 | 9 | 4 | .. | .. | 96 |
| 1916 | 82 | 10 | 3 | .. | .. | 95 |
| 1917 | 83 | 9 | 4 | .. | .. | 96 |
| 1918 | 79 | 6 | 2 | .. | 3 | 90 |

TABLE 9.—COLLEGE TERMS

| Year | 23 to 26 weeks | | 27 to 28 weeks | | 29 to 30 weeks | | 31 to 32 weeks | | 33 to 34 weeks | | 35 to 36 weeks | | Over 36 weeks | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| 1901 | 58 | 36.5 | 42 | 26.4 | 8 | 5.0 | 26 | 16.4 | 4 | 2.5 | 18 | 11.3 | 3 | 1.9 |
| 1902 | 44 | 28.4 | 44 | 28.4 | 11 | 7.1 | 33 | 21.3 | 3 | 1.9 | 18 | 11.6 | 2 | 1.3 |
| 1903 | 33 | 21.4 | 46 | 29.9 | 15 | 9.7 | 37 | 24.0 | 2 | 1.3 | 19 | 12.4 | 2 | 1.3 |
| 1904 | 27 | 16.3 | 44 | 26.5 | 22 | 13.3 | 37 | 22.3 | 13 | 7.8 | 20 | 12.0 | 3 | 1.8 |
| 1905 | 15 | 9.4 | 35 | 21.8 | 12 | 7.5 | 44 | 27.5 | 13 | 8.1 | 28 | 23.8 | 3 | 1.9 |
| 1906 | 14 | 8.7 | 35 | 21.7 | 26 | 16.1 | 32 | 19.9 | 24 | 14.9 | 28 | 17.4 | 2 | 1.3 |
| 1907 | 6 | 3.7 | 27 | 16.8 | 26 | 16.1 | 42 | 26.1 | 29 | 18.0 | 29 | 18.0 | 2 | 1.3 |
| 1908 | 2 | 1.3 | 21 | 13.8 | 28 | 18.4 | 51 | 33.6 | 24 | 15.8 | 22 | 14.5 | 4 | 2.6 |
| 1909 | 4 | 2.3 | 17 | 11.6 | 23 | 16.4 | 51 | 34.9 | 18 | 12.3 | 30 | 20.5 | 3 | 2.0 |
| 1910 | 2 | 1.5 | 8 | 6.0 | 19 | 14.3 | 42 | 31.5 | 30 | 22.6 | 30 | 22.6 | 2 | 1.5 |
| 1911 | .. | .... | 6 | 5.0 | 16 | 13.3 | 37 | 30.8 | 32 | 26.7 | 28 | 23.4 | 1 | 0.8 |
| 1912 | 1 | 0.9 | 1 | 0.9 | 11 | 9.5 | 34 | 29.3 | 37 | 31.8 | 31 | 26.7 | 1 | 0.9 |
| 1913 | .. | .... | 3 | 2.8 | 5 | 4.7 | 29 | 27.4 | 41 | 38.7 | 27 | 25.5 | 1 | 0.9 |
| 1914 | .. | .... | 2 | 2.0 | 4 | 4.0 | 25 | 24.8 | 41 | 40.5 | 28 | 27.7 | 1 | 1.0 |
| 1915 | .. | .... | 1 | 1.0 | 5 | 5.3 | 22 | 23.2 | 36 | 37.9 | 30 | 31.6 | 1 | 1.0 |
| 1916 | .. | .... | .. | .... | 4 | 4.2 | 17 | 17.9 | 43 | 45.3 | 28 | 29.5 | .. | .... |
| 1917 | .. | .... | .. | .... | 1 | 1.0 | 15 | 15.6 | 46 | 47.9 | 31 | 32.3 | .. | .... |
| 1918* | .. | .... | .. | .... | 2 | 2.2 | 23 | 25.6 | 37 | 41.1 | 22 | 24.4 | .. | .... |

* Information not furnished by six Class C colleges.

## COLLEGES, STUDENTS AND GRADUATES BY STATES

Illinois formerly had the largest number of medical colleges (Table 11), but for the last two years the first place has been held by New York, where there are nine colleges. Illinois, Missouri and Pennsylvania have six each; California, Massachusetts and Ohio have five each and Tennessee has four colleges. Of Class C colleges, however, Missouri has three, Massachusetts has two, and there is one each in California, Illinois, Nebraska and Tennessee. In Illinois, Missouri and Nebraska, however, the Class C colleges are not recognized by the local state licensing boards. For the last three years New York has had the largest number of students enrolled, this year having 2,526, followed by Illinois with 1,695 and Pennsylvania with 1,381. New York leads also in the number of graduates, having reported 437, followed by Illinois with 313, Pennsylvania with 286 and Massachusetts with 239.

TABLE 10.—COLLEGE FEES

| Total Fees | Number of Colleges | | | |
|---|---|---|---|---|
| | Class A | Class B | Class C* | Total |
| $ 50 or less | 3 | 2 | .. | 5 |
| 50 to $ 75 | 4 | 1 | 1 | 6 |
| 75 to 100 | 5 | .. | .. | 5 |
| 100 to 125 | 7 | 2 | 1 | 10 |
| 125 to 150 | 8 | .. | 4 | 12 |
| 150 to 175 | 17 | 4 | .. | 21 |
| 175 to 200 | 10 | 1 | 1 | 12 |
| 200 or above | 15 | 2 | 1 | 18 |
| Totals | 69 | 12 | 8 | 89 |

* Figures not obtainable from one Class C college.

Table 12 shows the students and graduates of the last six years grouped according to the rank of the

2. See Classification of Medical Colleges, page 552.
3. See THE JOURNAL, April 13, 1918, page 1084, Table D, which shows in what states diplomas granted by various colleges are not recognized as an acceptable qualification for the license to practice.

colleges in the classification of the Council on Medical Education Note that during the six years the percentage of students enrolled in Class A colleges has increased from 65.4 to 84.5 and that for the last three years the total enrolment of students in attendance at

TABLE 11.—MEDICAL COLLEGES, STUDENTS AND GRADUATES BY STATES

| State | Colleges | | Students | | Graduates | | Graduates with B.S. or A.B. |
|---|---|---|---|---|---|---|---|
| | Total | Class C | Men | Women | Men | Women | |
| Alabama | 1 | .. | 44 | .... | 11 | .... | 4 |
| Arkansas | 1 | .. | 52 | .... | 21 | .... | 3 |
| California | 5 | 1 | 425 | 45 | 76 | 10 | 10 |
| Colorado | 1 | .. | 70 | 4 | 6 | 2 | 7 |
| Connecticut | 1 | .. | 67 | 4 | 8 | .... | 8 |
| Dist. of Columbia | 3 | .. | 283 | 7 | 56 | 1 | 35 |
| Georgia | 2 | .. | 198 | .... | 33 | .... | 5 |
| Illinois | 6 | 1 | 1,603 | 92 | 294 | 19 | 105 |
| Indiana | 1 | .. | 208 | 7 | 35 | .... | 28 |
| Iowa | 2 | .. | 194 | 4 | 29 | 1 | 19 |
| Kansas | 1 | .. | 138 | 7 | 18 | .... | 11 |
| Kentucky | 1 | .. | 99 | .... | 16 | .... | 2 |
| Louisiana | 1 | .. | 267 | 8 | 62 | 1 | 18 |
| Maine | 1 | .. | 54 | .... | 18 | .... | 8 |
| Maryland | 2 | .. | 588 | 53 | 127 | 9 | 95 |
| Massachusetts | 5 | 2 | 905 | 40 | 230 | 9 | 109 |
| Michigan | 3 | .. | 512 | 29 | 95 | 5 | 52 |
| Minnesota | 1 | .. | 269 | 11 | 36 | 2 | 36 |
| Mississippi | 1 | .. | 57 | .... | .... | .... | .... |
| Missouri | 6 | 3 | 755 | 19 | 210 | 7 | 44 |
| Nebraska | 3 | 1 | 280 | 6 | 45 | 1 | 24 |
| New Hampshire | 1 | .. | 31 | .... | .... | .... | .... |
| New York | 9 | .. | 2,420 | 106 | 422 | 15 | 143 |
| North Carolina | 3 | .. | 97 | .... | .... | .... | .... |
| North Dakota | 1 | .. | 28 | 2 | .... | .... | .... |
| Ohio | 5 | .. | 553 | 20 | 125 | 3 | 63 |
| Oklahoma | 1 | .. | 72 | 4 | 13 | .... | 7 |
| Oregon | 1 | .. | 68 | 7 | 19 | 2 | 7 |
| Pennsylvania | 6 | .. | 1,307 | 74 | 270 | 16 | 109 |
| South Carolina | 1 | .. | 55 | .... | 9 | .... | 4 |
| South Dakota | 1 | .. | 17 | 2 | .... | .... | .... |
| Tennessee | 4 | 1 | 423 | 3 | 124 | 2 | 25 |
| Texas | 2 | .. | 317 | 16 | 62 | 1 | 15 |
| Utah | 1 | .. | 33 | 1 | .... | .... | .... |
| Vermont | 1 | .. | 105 | .... | 22 | .... | 5 |
| Virginia | 2 | .. | 239 | .... | 65 | .... | 21 |
| West Virginia | 1 | .. | 33 | 3 | .... | .... | .... |
| Wisconsin | 2 | .. | 180 | 7 | 7 | .... | 2 |
| Totals | 90 | 9 | 13,049 | 581 | 2,564 | 106 | 1,024 |

these schools has also increased. Note on the other hand, both the percentages and the totals of students enrolled in Class B colleges have been reduced. The percentage of students in Class B colleges has been reduced from 24.4 to 10.9 and in Class C colleges from 10.2 to 4.5 Of graduates, also, the percentage in Class A colleges shows an increase; in Class B colleges it is nearly at a standstill, while in Class C

TABLE 12.—STUDENTS AND GRADUATES ACCORDING TO CLASSIFICATION

| Year | Students | | | | | | Graduates | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Colleges Rated in Class | | | | | | Colleges Rated in Class | | | | | |
| | A | % | B | % | C | % | A | % | B | % | C | % |
| 1913 | 11,122 | 65.4 | 4,158 | 24.4 | 1,735 | 10.2 | 2,539 | 63.8 | 1,050 | 26.4 | 392 | 9.8 |
| 1914 | 12,336 | 74.7 | 2,838 | 17.2 | 1,328 | 8.1 | 2,626 | 73.1 | 686 | 19.1 | 282 | 7.8 |
| 1915 | 11,314 | 76.0 | 2,668 | 17.9 | 909 | 6.1 | 2,629 | 74.4 | 688 | 19.4 | 219 | 6.2 |
| 1916 | 11,162 | 79.6 | 2,087 | 14.9 | 773 | 5.5 | 2,630 | 74.7 | 695 | 19.8 | 193 | 5.5 |
| 1917 | 11,317 | 82.2 | 1,761 | 12.8 | 686 | 5.0 | 2,577 | 76.3 | 648 | 19.2 | 154 | 4.5 |
| 1918 | 11,522 | 84.5 | 1,488 | 10.9 | 620 | 4.5 | 2,024 | 75.8 | 399 | 14.9 | 247 | 9.2 |

colleges there has been a decrease, except for an increase this year, due to the organization of new medical schools of this variety. The reduction in the total numbers of students and graduates has been largely at the expense of the lower grade colleges, while the numbers of students and graduates in the higher grade colleges are actually increasing.

## COLLEGE NOTES

**Colleges Closed.**—Eleven medical schools have been closed during the year. Three of these, the North Carolina Medical College, Charlotte, N. C.; the Medico-Chirurgical College of Philadelphia, and the Lincoln Memorial University Medical Department, Knoxville, Tenn., were reported in previous years as having merged. They have continued their existence, nominal or otherwise, however, until the classes still enrolled at the time of the merger should have been graduated. The last classes graduated this year. The other eight colleges reported closed are the Hahnemann Medical College of the Pacific, San Francisco, closed; the Oakland College of Medicine and Surgery, Oakland, Calif., suspended; Chicago College of Medicine and Surgery, Chicago, merged with Loyola University School of Medicine (retaining the joint title); the Jenner Medical College, Chicago, suspended; Eclectic Medical University, Kansas City, Mo., suspended; National University of Arts and Sciences, Medical Department, St. Louis, suspended; New York Medical College and Hospital for Women, New York, reported abolished, and the Fort Worth School of Medicine, Fort Worth, Texas, suspended.

**New Colleges.**—Two other colleges are added to the list, both of which are of a rather nondescript character. The Middlesex College of Medicine and Surgery, Cambridge, Mass., has been organized in a close relationship to a college of osteopathy and has granted very liberal advanced standing for work done in osteopathic schools. The other is the Kansas City University of Physicians and Surgeons, Kansas City, Mo., which was formerly the Central College of Osteopathy. In 1917 it amended its charter, securing the right to grant degrees. Most of the students in its classes are those whose previous work has been taken in the osteopathic school.

### Special Items Concerning Medical Education

**Arkansas.**—The new Isaac Folsom Clinic, clinical building of the University of Arkansas Medical Department, has been completed at a cost of $35,000. The old medical schoolbuilding is being equipped as an isolation hospital at a cost of $6,000, this sum having been appropriated for the purpose by the state.

**California.**—The College of Physicians and Surgeons, Medical Department of the University of Southern California, Los Angeles, will require the hospital intern year for all students entering during 1918-19 and thereafter.

——The Pacific Medical College, Los Angeles, was a nondescript institution chartered in 1910 to grant M.D. degrees, but was reported not recognized either as a medical or a drugless college by the California State Board of Medical Examiners. The institution closed its doors about two years ago. Dr. C. B. Pinkham, secretary of the California Board, received word recently that diplomas were still being issued by the institution although no sessions were being held, and urged that state boards be on the lookout for such diplomas. At the California board's investigation the attorney for the college promised to take immediate steps to disincorporate the institution.

——The College of Medical Evangelists, during the last twelve months, has established a clinical department in Los Angeles. A city block has been purchased on which five buildings, including a 75-bed hospital, a dispensary, two dormitories and a hydrotherapy building, have been completed at a cost of approximately $100,000.

——A school for the intensive training of medical officers for the United States Army was established in San Francisco, March 15, 1918, under the direction of the medical faculties of the University of California and Stanford University.

**Colorado.**—The Colorado legislature voted a special appropriation of $150,000 a year for the next ten years to be used on buildings for the University of Colorado. The School of Medicine will secure new buildings from this fund.

**Connecticut.**—During the past year Yale University has secured an endowment of $2,500,000 for placing the departments of medicine, surgery, obstetrics and gynecology on a full-time clinical basis. A contract with the New Haven General Hospital gives the medical school complete control of the public wards.

——Yale University School of Medicine is doing its part in solving problems connected with the war. Its departments of physiology, pathologic chemistry and pathology, particularly, have been aiding the government in providing gas masks for the American troops and in conducting experiments leading to the reduction of fatalities from gas warfare.

**Georgia.**—Emory University School of Medicine has received $5,000 by the will of J. B. White, Augusta, to establish a camp for the treatment of tuberculosis.

**Illinois.**—Suit to recover the property of the Chicago College of Medicine and Surgery, valued at $300,000, was filed, March 19, 1918, by Mrs. Neva A. Brown, widow of the late Henry B. Brown, a chief owner of the Valparaiso University. The property was reported sold by Dr. J. Newton Roe to the Loyola University School of Medicine.

——The University of Illinois College of Medicine, Chicago, has adopted the quadrimester system by which each twelve months is divided into three terms of four months each. Under this arrangement students may begin the study of medicine at the beginning of any one of the three terms.

——The Illinois Department of Registration and Education has announced that after Oct. 15, 1918, no medical school will be recognized as in good standing in Illinois unless it requires for admission two years of work in an approved college of liberal arts and sciences or a fully equivalent education.

**Indiana.**—The Indiana University School of Medicine is erecting a new medical building on the property adjoining the Robert W. Long Hospital, Indianapolis, at an approximate cost of $400,000. The new building will have four or five stories and be of material harmonizing with the hospital buildings. About $150,000 of this sum will be realized from the sale of the old medical building. The medical school is continuing its sessions without vacations so as to hasten the graduation of physicians as a war measure.

**Maryland.**—The Maryland legislature, at its recent session, appropriated $25,000 annually for two years for the University of Maryland Medical School. The medical school has received as a gift the medical library and surgical instruments of the late Dr. Charles F. Bevan. The medical school also has voted to admit women students.

——Johns Hopkins Hospital has received $100,000 from the will of Jannie Gillender and $300,000 from the estate of James Buchanan Brady.

**Massachusetts.**—Harvard Medical School has voted to admit women students. This has been due to the heavy draft of the war on the medical profession.

——Boston University School of Medicine announces that it has become nonsectarian and from now on will offer courses in regular materia medica, therapeutics and practice.

**Michigan.**—The Detroit College of Medicine and Surgery has been taken over by the city of Detroit and placed under the control of the Board of Education. It will hereafter be maintained as a municipal institution.

**Minnesota.**—A Navy Hospital Corps Training School has been established in connection with the University of Minnesota Medical School. It was formally opened on Oct. 29, 1917, with an initial attendance of 100 men.

**Missouri.**—The Missouri State Board of Health reports that on July 8, 1918, recognition was withdrawn from the St. Louis College of Physicians and Surgeons.

**Nebraska.**—The University Hospital, erected on the campus of the College of Medicine of the University of Nebraska, was formally opened in October, 1917. It consists of 120 beds and was erected at a total cost, for the building and equipment, of $210,000. A new library building, an exact duplicate of the present library unit, is being erected on the medical campus which will house the departments of physiology, pharmacology and biochemistry. The funds were provided by the legislature which also appropriated $100,000 for maintenance for two years.

——The Nebraska State Board of Health has endorsed the action of the Advisory Board in refusing to permit graduates of the Lincoln Medical College to take the examination for the license to practice medicine in that state. It was stated that the medical school was not conforming with the requirements of the state law.

**New York.**—Columbia University College of Physicians and Surgeons has added a fifth clinical year to the medical course to be required of all students matriculating in and after September, 1918. The college has also opened its doors to women students. This was made possible by a gift of $50,000 from George W. Breckenridge, San Antonio, Texas, a gift of $5,000 from an association of women physicians, and $18,000 from other donations. A new building for the use of women students will be erected and additional laboratories provided.

——Cornell University Medical College has established a clinic for the functional reeducation of disabled soldiers, sailors and civilians. This constitutes practically a new branch of medicine.

——Long Island College Hospital, Brooklyn, has received $265,000 from the estate of Charles W. West.

——University of Buffalo Medical Department has begun a campaign for funds for a new medical building and laboratories. A gift of $10,000 has been obtained to go toward current expenses for the year.

——Fordham University School of Medicine has established a scholarship to be conferred on the senior student who has secured the highest general average during the first three years of the course. This scholarship will cover the student's tuition fees.

**Ohio.**—University of Cincinnati College of Medicine formally dedicated its new medical building on March 25, 1918. Subscriptions were previously raised for this building aggregating $555,000.

——Jan. 1, 1918, under the new charter for Cincinnati, all of the medical and scientific work of the Cincinnati General Hospital, was placed under the direction of the University of Cincinnati. The staff will be made up of members of the medical school faculty. Thus the medical school secures for teaching purposes the splendid clinical facilities of the hospital.

**Oklahoma.**—The legislature appropriated $200,000 for a state hospital at Oklahoma City to be under the control of the Oklahoma University School of Medicine. The building is rapidly approaching completion. The School of Medicine has completed a new chemistry building at Norman at a cost of $33,000.

**Oregon.**—On May 1, 1918, the University of Oregon Medical School dedicated Mackenzie Hall, the first unit of the new group of medical buildings. The building was erected at a cost of $117,000. It is on the new campus of 21 acres which provides space not only for other medical school buildings, but also for hospital sites.

**Pennsylvania.**—The University of Pennsylvania has received $50,000 from the will of Dr. William C. Goodell. The board of review has awarded the university damages of $714,000 for the old Medico-Chirurgical College and Hospital property taken by the city to provide space for the new parkway. The Medico-Chirurgical property had been transferred to the University of Pennsylvania with the merger two years ago.

——The Woman's Medical College of Pennsylvania has arranged four special lecture courses, these being on (*a*) reconstructive work in the devastated villages of Europe; (*b*) personal and public hygiene; (*c*) laboratory technic to prepare for routine work in war hospitals, and (*d*) nutrition and dietetics.

——The University of Pittsburgh School of Medicine is receiving $100 annually from the Pennsylvania Association for the Blind to be used as a prize to the member of the senior class who writes the best essay on the prevention of blindness.

**Tennessee.**—Meharry Medical College dedicated the new Anderson Anatomical Hall on Oct. 19, 1917. The $10,000 used in its erection was the gift of Dr. John W. Anderson of Dallas, Texas.

**Texas.**—During 1917 an attempt by Governor Ferguson to secure political control of the University of Texas and its medical department aroused a vigorous protest. A special session of the legislature was called; Governor Ferguson was impeached; an appropriation of $1,629,407.17 for the university, including $197,500 for the medical department, which Governor Ferguson had vetoed, was again passed, and three regents of the university named by Governor Ferguson were replaced by those who had the best interests of the university at heart.

**Virginia.**—The Medical College of Virginia has voted to admit women students. A new three-story hospital building is to be erected as a part of the new group of buildings for the Memorial Hospital. This first building will cost about $40,000 and will be used for contagious diseases. The money was donated by Major James H. Dooley.

**Wisconsin.**—The University of Wisconsin has received gifts amounting to $100,000, which, with an appropriation of $50,000 from the legislature of 1917, will be used to construct a new infirmary for the medical school.

——Marquette University School of Medicine is conducting a campaign to raise $1,000,000 for endowment. Mr. Andrew Carnegie has agreed to give one third of this sum provided the university raises the balance. During the first evening of the campaign $175,000 was raised. A gift of 1,000 volumes to be added to the medical library, has been received from the late Dr. John L. C. Cronyn of Buffalo.

**Canada.**—McGill University Medical Faculty, Montreal, has just opened its doors to women.

——The University of Toronto has recently received gifts of approximately $2,000,000 to endow chairs in pediatrics, gynecology, orthopedics, and a special branch in medicine.

**England.**—The London units of the Scottish Women's Hospitals have decided to establish a chair in medicine in the University of Belgrade, Serbia, when it is reestablished after the war, in honor of Dr. Elsie Englis, who was closely identified with hospital work.

### Scholarships in Medical Schools

Harvard University received $5,000 by the will of Mrs. Elizabeth Franham, for the creation of two scholarships in the medical school. A donation of $25,000, also, was received from an anonymous donor to establish a scholarship to bear the name of Dr. Edward H. Bradford, recently resigned dean of the medical school.

Cornell University received $5,000 by the will of the late Dr. William M. Polk, to continue the John Metcalf Polk scholarship in the medical school.

A scholarship in medicine for a college woman has been endowed by Mrs. E. T. Stotesbury and placed in charge of Dr. Elizabeth Thelberg of Vassar College, New York.

McGill University has been offered $10,000 by Mrs. Frank Oliver, Edmonton, Alta., to establish an annual scholarship of the value of $500, in memory of her son, the late Lieut. Allen Oliver, M. C., killed at the Somme.

### Funds for Research

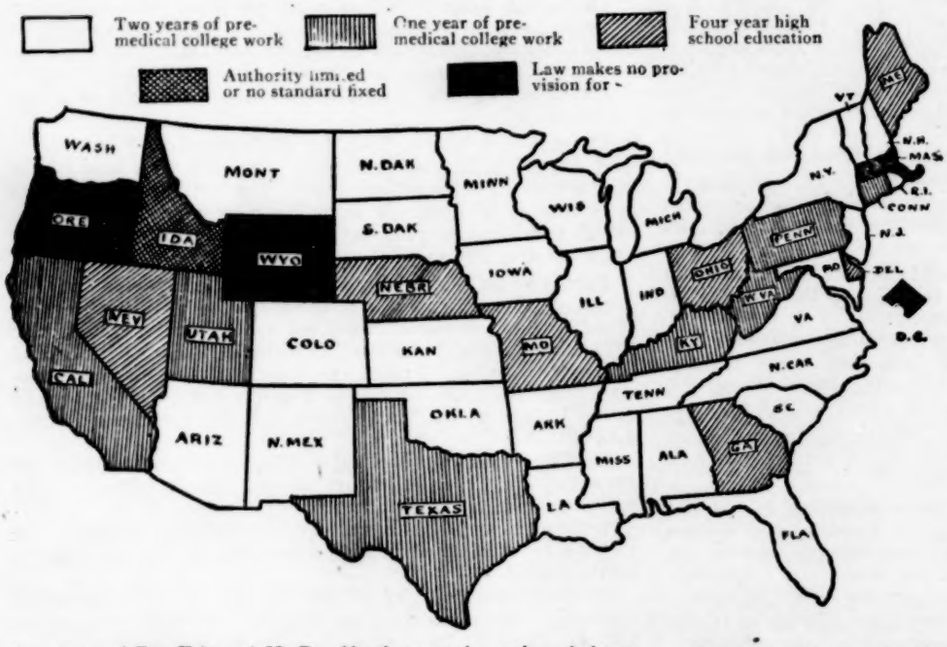
The University of California has obtained the rights of the product "Tethelin," isolated from the anterior lobe of the pituitary body and believed to control growth of cells, and to be capable of accelerating repair in slowly healing wounds. These rights have been given by Dr. T. Brailsford Robertson, professor of biochemistry and pharmacology in the medical school. All profits resulting from the discovery are to be used to endow medical research.

Harvard Medical School is prepared to offer courses of instruction in industrial hygiene and facilities to investigate the problems of industry. In these courses it has the assurance of the cooperation of an advisory board of prominent business men of Boston. A committee on industrial hygiene has been organized consisting of Dr. David L. Edsall, professor of clinical medicine; Dr. Reid Hunt, professor of pharmacology; Dr. Milton J. Rosenau, professor of preventive medicine and hygiene, and Dr. Cecil K. Drinker, assistant professor of physiology. Fellowships and scholarships are available for applicants who are properly qualified. Opportunities will be open to three separate groups, as follows: (*a*) research worker; (*b*) medical officers for large industries, and (*c*) inspectors of industries. Alterations in the plans will be made, if necessary, to meet war conditions.

Harvard University has received a donation of $10,000 under the will of Rebecca A. Green. Of this sum $500 will be used to found a John White Browne Scholarship for research in medicine. A fund of $100,000 was received by the will of Mrs. Charles H. Colburn for research in tuberculosis. A donation of $7,500 was received from M. Douglas Flattery; the income to be used annually to present a gold medal and $500 in cash to the person who may discover means that will result in the greatest good to humanity in connection with the prevention of disease and the conservation of health.

Columbia University recently announced a gift from an anonymous donor of $3,000 for research work in war problems, and another gift of $5,000 from Clarence Mackay for surgical research work.

STATE REQUIREMENTS OF PRELIMINARY EDUCATION




### Graduate Medical Instruction

The Philadelphia Polyclinic has recently merged with the Medico-Chirurgical Post-Graduate School of Pennsylvania.

On Jan. 17, 1918, bonds and cash amounting to $1,693,000, representing the trust fund established by Drs. Charles H. and William J. Mayo, Rochester, Minn., were turned over to the state treasurer to endow graduate medical instruction and research at the University of Minnesota.

A postgraduate medical school for negro physicians has been established in connection with the Provident Hospital of Chicago, which is a hospital for negro patients.

The University of Minnesota Graduate School has established teaching fellowships in pediatrics, medicine, surgery, nervous and mental diseases, ophthalmology and otolaryngology. These fellowships convey stipends of $500 to $1,000. A fellowship has also been established in tuberculosis.

### Requirements for the Practice of Medicine in Jamaica.

A letter from the American Consul at Kingston, Jamaica, states that in order to secure the legal right to practice medicine and surgery in the Island of Jamaica, a physician—unless he is on the British Register—should make application in writing to the Governor of Jamaica, requesting him to appoint a board of examiners to pass on his qualifications. He would then have to appear before this board and present a diploma from a faculty of medicine and a license to practice in some state, both of which should be duly authenticated. The physician would then be examined in the various branches of medicine, surgery and midwifery. The examination usually lasts about a week and is both oral and written. The fee must be deposited beforehand with the secretary of the Medical Council of Kingston. This fee amounts to about 12 guineas (English money), or about $65. No specified dates are fixed for examinations, these being held as occasion for them arises.

### Medical School at Monterey, Mexico

Correspondence received through the American Consul at Monterey, Mexico, quotes a Dr. Eusebio Guajardo as stating that the School of Medicine of Monterey was founded in September, 1859, and since May, 1878, has had its headquarters at the place known as "Hospital Gonzalez." Dr. Guajardo states that at the present time the School of Medicine has a building of its own and is attended by eighteen professors; that it has provided amphitheaters, laboratories and clinics.

He claims the curriculum is equal to that of the medical schools in Mexico City. He further states that the Mexican government has disbursed $20,000 (Mexican gold) for the School of Medicine at Monterey during the present school year. The present title of the school in Spanish is "Escuela de Medicina de Nuevo León."

Recognition of this school in the United States cannot be recommended until further information in regard to the character of the teachers and laboratories, and the abundance and use made of clinical material has been ascertained. An attempt is being made to secure this information.

### The New Peking Union Medical College

The announcement of the new Peking Union Medical College, Peking, China, for the session of 1918-19, has recently been sent out. It contains a perspective view of the new medical school and its group of hospital buildings. These, when completed, will consist of seventeen buildings, connected by covered corridors, and will occupy the space of about four city blocks. All but four of these buildings and two prospective wings of the medical school have already been completed. A premedical school was opened in September, 1917, and the medical school will be open for students in September, 1919. Graduation from an approved middle school of China, or its equivalent, in addition to 108 credit (semester) hours of college work, is required for admission. The premedical work includes courses in English, Chinese language and literature, algebra through quadratics, plane geometry, biology, chemistry, physics, Chinese and universal history and drawing. The teaching year begins September 17 and will end June 20 of the following year. The announcement contains floor plans of the various college and hospital buildings.

This Peking Union Medical College was founded early in 1906 by various American and English boards of missions, following the Boxer outbreak. Substantial contributions toward the building fund were obtained from the Empress Dowager of China. The Chinese language was the medium of instruction.

The college rendered valuable service in 1910-11 in connection with the serious outbreak of pneumonia and the epidemic of the plague. As a result of their work three members of the college staff were decorated with the Order of the Double Dragon. The college staff, also, rendered valuable military surgical work with the Imperial forces during the revolution of 1911.

In the spring of 1914, the China Medical Commission, representing the Rockefeller Foundation, was sent to China "to inquire into the condition of medical education, hospitals and public health in China." This commission recommended Peking as the place where the first medical educational work should be organized. The China Medical Board was then organized which took over the property of the college. The terms of the transfer provided for a board of trustees consisting of thirteen members, one to be appointed by each of the six missionary organizations previously maintaining the college, and seven by the China Medical Board. Full support of the college was assumed by the China Medical Board on July 1, 1915.

This generous support of medical education in China by Mr. Rockefeller will help to strengthen the friendship between America and the newly established republic on the other side of the Pacific Ocean.

### The Training of the Student of Medicine

A series of papers on "The Training of the Student of Medicine," the result of an organization conducted under the auspices of the Edinburgh Pathological Club, have appeared in the Edinburgh *Medical Journal*, beginning with the January, 1918, number. Including the July number, altogether twenty-five separate articles have appeared. Extensive discussions which followed the reading of the article before the Royal Medical Society and the Edinburgh Pathological Club are also published. The papers thus published and their authors are as follows:

1. The Aim of Medical Education, Sir James Mackenzie.
2. The Teaching of Chemistry, Prof. James Walker.
3. Botany in Medical Education, Prof. Bayley Balfour.
4. The Connection of Zoology with Medicine, Prof. J. Cossar Ewart.
5. The Teaching of Anatomy, Prof. G. Elliot Smith.
6. The Teaching of Anatomy, Prof. David Waterston.
7. The Place of Anatomy in the Curriculum, Professor Robinson.
8. The Relation of Physiology to Medicine, Dr. J. S. Haldane.
9. The Position of Systematic Lectures in the Curriculum, Sir Edward A. Schäfer.
10. The Relation of the Preliminary Sciences to the Curriculum. Sir Edward A. Schäfer.
11. Pathology and the Medical Students, Prof. Henry R. Dean.
12. On the Teaching of Pathological Anatomy with Special Reference to Clinical Medicine, Dr. Ivy MacKenzie.
13. Pathology in General Practice, James S. Edwards.
14. The Teaching of Pathology, Prof. Lorrain Smith.
15. The Place of Bacteriology in the Ordinary Medical Curriculum, Professor Ritchie.
16. Memorandum on the Teaching of Materia Medica and Therapeutics, Prof. Sir T. R. Fraser.
17. The Teaching of Materia Medica and Therapeutics, Prof. C. R. Marshall.
18. Teaching: With Special Reference to Materia Medica.
19. The Teaching of Materia Medica, Prof. Ralph Stockman.
20. Memorandum of the Teaching of "Public Health" in the Curriculum of Medical Students, John Robertson.
21. The Teaching of Public Health, Prof. Matthew Hay.
22. The Place of Public Health in the Medical Curriculum Prof. Hunter Stewart.
23. The Teaching of Medicine, Prof. William Russell.
24. The Teaching of Medicine, Prof. G. Lovell Gulland.
25. The Teaching of Medicine, Dr. Edwin Matthew.

### State Requirements of Preliminary Education

There are now thirty-seven states which have adopted requirements of preliminary education in addition to a standard four-year high school education. These states, the number of college years required and the time the higher requirements became or become effective are as follows:

TABLE 3.—STATE REQUIREMENTS OF PRELIMINARY EDUCATION

| State Examining Board of | One Year of College Work | | Two Years of College Work | |
|---|---|---|---|---|
| | Affects Students Matriculating | Affects All Graduates | Affects Students Matriculating | Affects All Graduates |
| Alabama | ..... | .... | 1915-16 | 1919 |
| Alaska | 1914-15 | 1918 | 1918-19 | 1922 |
| Arizona | 1914-15 | 1918 | 1918-19 | 1922 |
| Arkansas | 1915-16 | 1919 | 1918-19 | 1922 |
| California | 1915-16 | 1919 | ..... | .... |
| Colorado | 1908-09 | 1912 | 1910-11 | 1914 |
| Connecticut | 1911-12 | 1915 | ..... | .... |
| Delaware* | ..... | .... | ..... | .... |
| Dist. of Columbia† | ..... | .... | ..... | .... |
| Florida | 1914-15 | 1918 | 1918-19 | 1922 |
| Georgia* | ..... | .... | ..... | .... |
| Idaho* | ..... | .... | ..... | .... |
| Illinois | 1915-16 | 1919 | 1918-19 | 1922 |
| Indiana | 1910-11 | 1914 | 1911-12 | 1915 |
| Iowa | ..... | .... | 1911-12 | 1915 |
| Kansas | 1910-11 | 1914 | ..... | .... |
| Kentucky | 1914-15 | 1918 | ..... | .... |
| Louisiana | 1915-16 | 1919 | 1918-19 | 1922 |
| Maine* | ..... | .... | ..... | .... |
| Maryland | 1914-15 | 1918 | 1918-19 | 1922 |
| Massachusetts† | ..... | .... | ..... | .... |
| Michigan | 1914-15 | 1918 | 1918-19 | 1922 |
| Minnesota | ..... | .... | 1908-09 | 1912 |
| Mississippi | 1915-16 | 1919 | 1919-20 | 1923 |
| Missouri* | ..... | .... | ..... | .... |
| Montana | 1914-15 | 1918 | 1918-19 | 1922 |
| Nebraska* | ..... | .... | ..... | .... |
| Nevada* | ..... | .... | ..... | .... |
| New Hampshire | 1914-15 | 1918 | 1915-16 | 1919 |
| New Jersey | 1915-16 | 1919 | 1916-17 | 1920 |
| New Mexico | 1914-15 | 1918 | 1918-19 | 1922 |
| New York | 1917-18 | 1921 | 1918-19 | 1922 |
| North Carolina | 1914-15 | 1918 | 1918-19 | 1922 |
| North Dakota | ..... | .... | 1908-09 | 1912 |
| Ohio* | ..... | .... | ..... | .... |
| Oklahoma | 1914-15 | 1918 | 1917-18 | 1921 |
| Oregon† | ..... | .... | ..... | .... |
| Pennsylvania | 1914-15 | 1918 | ..... | .... |
| Rhode Island | 1914-15 | 1918 | 1918-19 | 1922 |
| South Carolina | ..... | .... | 1916-17 | 1920 |
| South Dakota | 1908-09 | 1912 | 1911-12 | 1915 |
| Tennessee | 1916-17 | 1920 | 1918-19 | 1922 |
| Texas | 1914-15 | 1918 | ..... | .... |
| Utah | 1913-14 | 1917 | ..... | .... |
| Vermont | 1913-14 | 1917 | 1918-19 | 1922 |
| Virginia | 1914-15 | 1918 | 1917-18 | 1921 |
| Washington | 1914-15 | 1918 | 1918-19 | 1922 |
| West Virginia | 1917-18 | 1921 | ..... | .... |
| Wisconsin | ..... | .... | 1915-16 | 1919 |
| Wyoming† | ..... | .... | ..... | .... |

* Require a four-year high school education or its equivalent.
† No fixed standard.

## STANDARDS OF THE COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION

### SCHEDULE FOR THE GRADING OF MEDICAL SCHOOLS

Schools will be rated on a civil service basis on a scale of 1,000 points. The data relating to each school will be grouped under ten general heads in such a manner that the groups will have as nearly equal weight as possible, each group allowing a possible 100 points (10 per cent.) out of a posible 1,000 points (100 per cent.). The revised schedule showing the general heads under which the data will hereafter be arranged is as follows:

1. Character of curriculum, grading of course, sequence of subjects, supervision, administration, etc.
2. Medical school buildings; adaptability, light, heat, ventilation, cleanliness, etc.
3. Laboratory facilities and instruction.
4. Dispensary facilities and instruction.
5. Hospital facilities and instruction in medicine, surgery, obstetrics, and gynecology.
6. Hospital facilities for instruction in medical specialties and provision for clinical clerkships, necropsies, etc.
7. Full-time instructors and assistants with special reference to their special qualifications and evidences of their work, including research.
8. Faculty, number, qualifications and organization of, including the staff of teaching hospitals.
9. Library, museum, charts and special apparatus and evidences of the use made of them.
10. Showing of graduates at state board and other examinations and other evidences by which the training received is indicated.

It will be noted that financial income is not referred to in the ten heads outlined. It is quite evident, however, that no college can secure an adequate number of expert full-time teachers, provide well equipped laboratories, library and museum, and be conducted in accordance with present-day medical knowledge without a liberal income in addition to students' fees.

#### Meaning of Classes A, B, and C

Class A Colleges will, as heretofore, be those which are acceptable; Class B, those which, under their present organization, give promise of being made acceptable by general improvements, and Class C those

(*a*) Which require a complete reorganization to make them acceptable.

(*b*) Which do not keep satisfactory records of their students in regard to entrance requirements, attendance, grades in courses, division into classes and reasons for promotion.

(*c*) Which do not enforce their requirements in regard to admission (including those admitted to advanced standing), promotion and graduation.

(*d*) Which give the major portion of their instruction after 4 o'clock in the afternoon.

(*e*) Which are privately owned and conducted for profit.

(*f*) Which for other specific reasons are not eligible for inclusion in Class B.

### ESSENTIALS OF AN ACCEPTABLE MEDICAL COLLEGE

(Revised to June 15, 1918)

The following outline of the essentials of an acceptable medical college was issued by the Council on Medical Education of the American Medical Association for its suggestive value in the rapid development in progress in the medical colleges of the United States. It also represents the standard by which medical colleges are measured in the Council's classifications.

#### Requirements for Admission

1. The minimum requirement for admission to an acceptable medical college is a four-year high school education or its full equivalent and two years of work in a college of arts and sciences approved by the Council, as follows:

#### I. High School Requirements

(*a*) For admission to the two-year premedical college course, students shall have completed a four-year course of at least fourteen units (fifteen after Jan. 1, 1920) in a standard accredited high school or other institution of standard secondary school grade, or have the equivalent as demonstrated by examinations conducted by the College Entrance Examination Board, or by the authorized examiner of a standard college or university which has been approved by the Council on Medical Education. Unless all the entrance units are obtained by examination, a detailed statement of attendance at the secondary school, and a transcript of the student's work, should be kept on file by the college authorities. This evidence of actual attendance at the secondary schools should be obtained, no matter whether the student is admitted to the freshman or to higher classes.

(*b*) Credits for admission to the premedical college course may be granted for the subjects shown in the following list and for any other subject counted by a standard accredited high school as a part of the requirements for its diploma, provided that at least eleven units must be offered in Groups I-V:

SCHEDULE OF SUBJECTS REQUIRED OR ACCEPTED FOR ENTRANCE TO THE PREMEDICAL COLLEGE COURSE

| Subjects | Units* | Required |
|---|---|---|
| **Group I, English—** | | |
| Literature and composition | 3-4 | 3 |
| **Group II, Foreign Languages—** | | |
| Latin | 1-4 | 2† |
| Greek | 1-3 | |
| French or German | 1-4 | |
| Other foreign languages | 1-4 | |
| **Group III, Mathematics—** | | |
| Elementary algebra | 1 | 1 |
| Advanced algebra | ½-1 | .. |
| Plane geometry | 1 | 1 |
| Solid geometry | ½ | .. |
| Trigonometry | ½ | .. |
| **Group IV, History—** | | |
| Ancient history | ½-1 | 1 |
| Medieval and modern history | ½-1 | |
| English history | ½-1 | |
| American history | ½-1 | |
| Civil government | ½-1 | |
| **Group V, Science—** | | |
| Botany | ½-1 | .. |
| Zoology | ½-1 | .. |
| Chemistry | 1 | .. |
| Physics | 1 | .. |
| Physiography | ½-1 | .. |
| Physiology | ½-1 | .. |
| Astronomy | ½ | .. |
| Geology | ½-1 | .. |
| **Group VI, Miscellaneous—** | | |
| Agriculture | 1-2 | .. |
| Bookkeeping | ½-1 | .. |
| Business law | ½ | .. |
| Commercial geography | ½-1 | .. |
| Domestic science | 1-2 | .. |
| Drawing, freehand and mechanical | ½-2 | .. |
| Economics and economic history | ½-1 | .. |
| Manual training | 1-2 | .. |
| Music: Appreciation or harmony | 1-2 | .. |

* A unit is the credit value of at least thirty-six weeks' work of four or five recitation periods per week, each recitation period to be not less than forty minutes. In other words, a unit represents a year's study in any subject in a secondary school, constituting approximately a quarter of a full year's work. A satisfactory year's work in any subject cannot be accomplished under ordinary circumstances in less than 120 sixty-minute hours, or their equivalent.

† Both of the required units of foreign language must be of the same language, but the two units may be presented in any one of the languages specified.

Of the fourteen units of high school work (fifteen after Jan. 1, 1920), eight units are required, as indicated in the foregoing schedule; the balance may be made up from any of the other subjects in the schedule.

#### II. Premedical College Course

(*c*) Beginning Jan. 1, 1918, the minimum requirement for admission to acceptable medical schools, in addition to the high school work specified above, will be sixty semester hours of collegiate work, extending through two years, of thirty-two weeks each, exclusive of holidays, in a college approved[4] by the Council on Medical Education. The subjects included in the two years of college work should be in accordance with the following schedule:

4. A tentative list of approved colleges may be received on application.

### SCHEDULE OF SUBJECTS OF THE TWO-YEAR PREMEDICAL COLLEGE COURSE

| Sixty Semester Hours* Required | Semester Hours |
|---|---|
| **Required Subjects:** | |
| Chemistry (a) | 12 |
| Physics (b) | 8 |
| Biology (c) | 8 |
| English composition and literature (d) | 6 |
| Other nonscience subjects (e) | 12 |
| **Subjects Strongly Urged:** | |
| French or German (f) | 6-12 |
| Advanced botany or advanced zoology | 3 -6 |
| Psychology | 3 -6 |
| Advanced mathematics, including algebra and trigonometry | 3 .6 |
| Additional courses in chemistry | 3 -6 |
| **Other Suggested Electives:** | |
| English (additional), economics, history, sociology, political science, logic, mathematics, Latin, Greek, drawing. | |

*A semester hour is the credit value of sixteen weeks' work consisting of one lecture or recitation period per week, each period to be not less than fifty minutes net, at least two hours of laboratory work to be considered as the equivalent of one lecture or recitation period.

#### SUGGESTIONS REGARDING INDIVIDUAL SUBJECTS

(*a*) *Chemistry.*—Twelve semester hours required (eight until Jan. 1, 1919), of which at least eight semester hours must be in general inorganic chemistry, including four semester hours of laboratory work. In the interpretation of this rule work in qualitative analysis may be counted as general inorganic chemistry. The remaining four semester hours (required after Jan. 1, 1919) may consist of additional work in general chemistry or of work in analytic or organic chemistry.

(*b*) *Physics.*—Eight semester hours required, of which at least two must be laboratory work. It is urged that this course be preceded by a course in trigonometry. This requirement may be satisfied by six semester hours of college physics, of which two must be laboratory work, if preceded by a year (one unit) of high school physics.

(*c*) *Biology.*—Eight semester hours required, of which four must consist of laboratory work. The requirement may be satisfied by a course of eight semester hours in either general biology or zoology, or by courses of four semester hours each in zoology and botany, but not by botany alone.

(*d*) *English Composition and Literature.*—The usual introductory college course of six semester hours, or its equivalent, is required.

(*e*) *Nonscience Subjects.*—Of the sixty semester hours required as the measurement of two years of college work, at least eighteen, including the six semester hours of English, should be in subjects other than the physical, chemical or biologic sciences.

(*f*) *French or German.*—A reading knowledge of one of these languages is strongly urged. If the reading knowledge in one of these languages is obtained on the basis of high school work, the student is urged to take the other language in his college course. It is not considered advisable, however, to spend more than twelve of the required sixty semester hours on foreign languages. In case a reading knowledge of one language is obtained by six semester hours of college work, another six semester hours may be well spent in taking the beginner's course in the other language; if this is followed up by a systematic reading of scientific prose, a reading knowledge of the second language may be readily acquired. When a student spends more than two years in college he may well spend twelve semester hours of his college work in the second language.

## III. Approved Colleges of Arts and Sciences

A tentative list of colleges of arts and sciences approved by the Council on Medical Education has been prepared, and revisions of this list will be published from time to time. By an approved college (of arts and sciences) is meant one whose standing has been vouched for by some standardizing agency in whose methods the Council has confidence. To be recognized a college must have sufficient scientific equipment and maintain laboratories in the premedical sciences. It must have ample endowment to maintain a sufficient corps of teachers. Membership in some national organization or association of colleges will be favorably regarded by the Council and, in the absence of such membership, careful investigation will be made of the causes of exclusion. It must also maintain national standards for admission to its freshman class. Students must be required to complete a four-year high school course, and the requirements for admission to the premedical course must be no less than the requirements for admission to the regular B. S. course of the college.

Particular attention will be given to the character of high schools from which certificates are received. Colleges should recognize only certificates from high schools approved by commissions or boards of associations of colleges and secondary schools or other agencies approved by the Council. When such endorsement is lacking the college should be slow in accepting certificates without the support of entrance examinations. Undue liberality in the acceptance of certificates from secondary schools unendorsed by approved standardizing agencies will be registered by the Council as a failure to comply with its requirements and the college will be dropped from the approved list.

#### PREMEDICAL COURSES IN MEDICAL COLLEGES—JUNIOR COLLEGES

Premedical college courses given in or by medical schools, or advance years taken in high schools, will not be considered as acceptable unless they have been investigated and approved by some association of colleges and secondary schools or other approved agency having to do with the standardizing of liberal arts colleges.

#### ADMINISTRATION OF ENTRANCE REQUIREMENTS

2. The admission of students to the medical school must be in the hands of a responsible committee or examiner whose records shall always be open for inspection.[5] Documentary evidence of the students' preliminary education should be obtained and kept on file. When the medical school is an integral part of a university, this work usually devolves on the university examiner. Unless the university examiner and his records are closely accessible, however, some officer at the medical school should obtain and keep on file documentary evidence of each student's preliminary education, including both high school and collegiate work. It is particularly important that the records show that the required amount of work in the premedical sciences, including laboratory exercises, has been completed.

#### OTHER MEDICAL SCHOOL REQUIREMENTS

3. The college should require that students be in actual attendance in the college *within the first week* of each annual session and thereafter.

4. Actual attendance at classes should be insisted on except for good cause, such as for sickness, and no credit should be given for any course where the attendance has been less than 80 per cent. of the full time.

5. (*a*) Full advanced standing may be granted to students only for work done in other acceptable medical schools, and in granting advanced standing there should be no discrimination against the college's full-course students. Official verification of the student's previous medical work should be obtained by direct correspondence with the college previously attended, and his preliminary qualifications should also be verified and recorded the same as for freshman students. (*b*) In *exceptional cases* students from Class B medical schools may be given advanced standing but not higher than *entrance* to the third year (junior) class, and no credit should be given in any subject except on recommendation of the head of the department teaching that subject. (*c*) In *exceptional cases* students from Class C colleges may be given advanced standing but not higher than *entrance* to the second year (sophomore) class, and then only after thorough examinations in all first year subjects have been passed.

#### SUPERVISION, EQUIPMENT, TEACHERS

6. There should be careful and intelligent supervision of the entire school by the dean or other executive officer who holds, and has sufficient authority to carry out, fair ideals of medical education as determined by the present day knowledge of medicine.

7. There should be a good system of records[6] showing conveniently and in detail the credentials, attendance, grades and accounts of the students, by means of which an exact knowledge can be obtained regarding each student's work.

5. See "Meaning of Classes A, B and C," paragraph (*c*), on page 548.

6. See "Meaning of Classes A, B and C," paragraph (*b*), on page 548.

Records should also be kept showing readily the attendance of patients at the teaching hospitals and dispensaries; the maternity cases attended by students, and the postmortem cases used in teaching.

8. The college curriculum should be fully graded and should cover four sessions of at least thirty-two weeks each, exclusive of time required for matriculation and holidays, and at least thirty hours per week of actual work. The courses offered in the various subjects should be set forth by departments (anatomy, physiology, etc.) in the annual announcement, showing for each course its number, subject content, character (lecture, recitation, laboratory or clinic), length of time, when, where, and by whom given, and the amount of credit allowed. The courses for each class should also be clearly set forth in a printed class schedule, for the guidance of the students.

(*a*) The college should give two years of work consisting largely of laboratory work in well equipped laboratories of anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics and clinical diagnosis. Present-day medical knowledge makes it essential that these subjects be in charge of full-time, well-trained teachers.

(*b*) Two years of clinical work, largely in hospitals and dispensaries, with courses in medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene and medical jurisprudence. With the higher entrance requirements time is now available in the latter part of the second year for beginning courses in physical diagnosis and the principles of surgery.

(*c*) As soon as conditions warrant, relations should be established with a number of approved hospitals so that a fifth undergraduate year may be required to be spent by the student as an intern under the continued supervision of the medical school.

### FACULTY

9. (*a*) The college should provide at least *eight expert thoroughly trained professors in the laboratory branches,* salaried so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects.[7] There should also be a sufficient number of assistants in each department to look after the less important details. For colleges having *sixty students or less* in each class, there should be *at least one full-time salaried assistant each in the departments* of (1) anatomy, (2) physiology, (3) pathology and bacteriology, and (4) physiologic chemistry and pharmacology, and *one additional assistant in each of these departments should be provided for each additional thirty students enrolled.* This represents a low average of the full-time assistants already employed by the acceptable medical colleges.

(*b*) The faculty should be made up of graduates of institutions recognized as medical colleges and who have had a training in all departments of medicine. Nonmedical men should be selected as teachers in medical schools only under exceptional circumstances and only when medical men of equal special capacity are not available. The faculty should be organized, each department having its head professor, its associate professor, assistant professor, instructor, etc., each having his particular subjects for the teaching of which he is responsible to the head of the department.

### CLINICAL FACILITIES

10. (*a*) The college should own or entirely control a hospital, in order that students may come into close and extended contact with patients under the supervision of the attending staff. This hospital should be in close proximity to the college and have a daily average (for senior classes of 100 students *or less*) of not less than 200 patients who can be utilized for clinical teaching, these patients to be of such character as to permit the students to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties. In the use of this material *bedside and ward clinics* should be developed for sections of from five to ten students, and for the seniors, a certain number of patients in medicine, surgery and the specialties should be assigned to each student. A well supervised clinical clerk system should also be installed. The treatment and care of these patients should be particularly observed and recorded by the student under the strict supervision of the intern, or the attending staff of the hospital.[8]

(*b*) The college should also have ample hospital facilities for children's diseases, contagious diseases and nervous and mental diseases.

(*c*) The college should own or control a dispensary, or outpatient department, the attendance to be a daily average of 100 patients (visits) (for senior classes of 100 students *or less*), the patients to be carefully classified, good histories and records of the patients to be kept and the material to be well used. The attending staff should be made up of good teachers, should be well organized and be regular in attendance.

(*d*) At least six maternity cases should be provided for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

(*e*) Facilities should be provided for at least thirty necropsies (for senior classes of 100 students *or less*) during each college session which are attended and participated in by senior students.

### OTHER TEACHING FACILITIES AND FINANCES

11. The college should have a working medical library, to include the more modern text and reference books with the *Index Medicus* and thirty or more leading medical periodicals, the current numbers of which should be in racks or on tables easily accessible to the students; the library room should be properly lighted and heated, and open during all or the greater part of the day; it should be equipped with suitable indexes as well as with tables and chairs, and have a competent librarian in charge.

12. There should be a working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from postmortems there also be kept the record of the postmortem, the clinical history of the patient on whom the necropsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen. The museum furnishes an excellent means of correlating the work of the department of pathology with that of the clinical departments.

13. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver, to provide cross-sections and other demonstration material and to allow of a thorough course for each senior in operative surgery on the cadaver.

14. For modern experimental laboratory work in physiology, pharmacology and bacteriology as well as for medical research, a supply of animals—frogs, turtles, rabbits and guinea-pigs, if not also cats and dogs—is essential. Proper provision, also, is necessary for the housing and care of such animals. In any use made of animals every precaution should be taken to prevent needless suffering, and work by students should be carefully supervised.

15. Each college should have a supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, a roentgen-ray and other apparatus now so generally used in medical teaching.

16. The college should show evidences of thorough organization and of reasonably modern methods in all departments, and evidences that the equipment and facilities are *being intelligently used* in the training of medical students.

17. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and latest graduating class in regular annual catalogues or announcements.

7. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be the training of medical students. It is suggested that four of these professors be placed at the head of the departments of (*a*) anatomy, (*b*) physiology, (*c*) pathology and bacteriology and (*d*) physiologic chemistry and pharmacology. The other four may be assigned, one each, to (*e*) histology and embryology, under the department of anatomy, and to the departments of pathology and bacteriology, physiology and pharmacology, and to the departments of internal medicine and surgery.

8. Suggestions more in detail may be found in the "Report of the Committee on the Reorganization of Clinical Teaching."—THE JOURNAL A. M. A., March 6, 1915. Reprint sent on application.

18. Statistics show[9] that modern medicine cannot be acceptably taught by a medical school depending solely on the income from students' fees. No medical school should expect to secure admission to, or be retained in Class A, therefore, which does not have an annual income of at least $25,000 in addition to the amount obtained from students' fees.

*NOTE.—Correspondence from medical colleges regarding the above requirements is invited, and further suggestions or information available will be gladly furnished.*

### ENTRANCE REQUIREMENTS OF MEDICAL COLLEGES

Eighty-one medical schools are now requiring, as a minimum for entrance, *two years* or more of work in a college of liberal arts in addition to a four-year high-school education. The years, respectively, when for each college the one-year and the two-year requirements became effective, and the rating of each college, are as follows:

| College | One Year | Two Years | College Rating |
|---|---|---|---|
| **ALABAMA** | | | |
| University of Alabama School of Medicine | 1914 | 1915 | A |
| **ARKANSAS** | | | |
| University of Arkansas Medical Department | 1915 | 1918 | B |
| **CALIFORNIA** | | | |
| College of Medical Evangelists | 1914 | 1915 | B |
| University of Southern California Med. Dept. | 1914 | 1916 | B |
| Leland Stanford Junior University School of Med. | .... | 1909 | A |
| University of California Medical School | .... | 1905 | A |
| **COLORADO** | | | |
| University of Colorado School of Medicine | .... | 1910 | A |
| **CONNECTICUT** | | | |
| Yale University School of Medicine | .... | 1909 | A |
| **DISTRICT OF COLUMBIA** | | | |
| Georgetown University School of Medicine | .... | 1912 | A |
| George Washington University Medical School | 1914 | 1918 | A |
| Howard University School of Medicine | 1910 | 1914 | A |
| **GEORGIA** | | | |
| Emory University School of Medicine, Atlanta | 1914 | 1918 | A |
| University of Georgia Medical Department | 1914 | 1918 | A |
| **ILLINOIS** | | | |
| Chicago College of Medicine and Surgery School of Medicine of Loyola University | 1915 | 1918 | B |
| Hahnemann Medical College and Hospital | 1914 | 1916 | B |
| Northwestern University Medical School | 1908 | 1911 | A |
| Rush Medical College (University of Chicago) | .... | 1904 | A |
| University of Illinois College of Medicine | 1913 | 1914 | A |
| **INDIANA** | | | |
| Indiana University School of Medicine | 1909 | 1910 | A |
| **IOWA** | | | |
| State University of Iowa College of Medicine | 1909 | 1910 | A |
| State University of Iowa College of Homeo. Med. | .... | 1910 | A |
| **KANSAS** | | | |
| University of Kansas School of Medicine | .... | 1909 | A |
| **KENTUCKY** | | | |
| University of Louisville Medical Department | 1914 | 1918 | A |
| **LOUISIANA** | | | |
| Tulane University of Louisiana School of Medicine. | 1910 | 1918 | A |
| **MAINE** | | | |
| Bowdoin Medical School | 1912 | 1916 | A |
| **MARYLAND** | | | |
| Johns Hopkins University Medical Department | .... | 1893 | A |
| University of Maryland School of Med. and Coll. of Physicians and Surgeons | 1914 | 1918 | A |
| **MASSACHUSETTS** | | | |
| Boston University School of Medicine | 1914 | 1916 | A |
| Medical School of Harvard University | .... | 1900 | A |
| Tufts College Medical School | 1914 | 1918 | A |
| **MICHIGAN** | | | |
| Detroit College of Medicine and Surgery | 1914 | 1918 | A |
| University of Michigan Medical School | .... | 1909 | A |
| University of Michigan Homeopathic Medical School | 1912 | 1916 | A |
| **MINNESOTA** | | | |
| University of Minnesota Medical School | .... | 1907 | A |
| **MISSISSIPPI** | | | |
| University of Mississippi School of Medicine | 1914 | 1918 | A |
| **MISSOURI** | | | |
| St. Louis University School of Medicine | 1910 | 1918 | A |
| University of Missouri School of Medicine | 1906 | 1910 | A |
| Washington University Medical School | 1910 | 1912 | A |
| **NEBRASKA** | | | |
| John A. Creighton Medical College | 1914 | 1918 | A |
| University of Nebraska College of Medicine | 1908 | 1909 | A |
| **NEW HAMPSHIRE** | | | |
| Dartmouth Medical School | .... | 1910 | A |
| **NEW YORK** | | | |
| Albany Medical College | 1914 | 1918 | A |
| Columbia University College of Phys. and Surg. | .... | 1910 | A |
| Cornell University Medical College | .... | 1908 | A |
| Fordham University School of Medicine | 1911 | 1918 | A |
| Long Island College Hospital | 1914 | 1918 | A |
| New York Homeo. Med. Coll. and Flower Hospital | 1915 | 1919 | B |
| Syracuse University College of Medicine | 1909 | 1910 | A |
| University and Bellevue Hospital Medical College | 1912 | 1918 | A |
| University of Buffalo Department of Medicine | 1914 | 1918 | A |
| **NORTH CAROLINA** | | | |
| Leonard Medical School | .... | 1914 | B |
| Wake Forest College School of Medicine | .... | 1908 | A |
| University of North Carolina School of Medicine | 1910 | 1917 | A |
| **NORTH DAKOTA** | | | |
| University of North Dakota School of Medicine | .... | 1907 | A |
| **OHIO** | | | |
| Eclectic Medical College | 1915 | 1918 | B |
| Ohio State University College of Medicine | 1914 | 1915 | A |
| Ohio State Univ. Coll. of Homeopathic Medicine | 1915 | 1916 | B |
| University of Cincinnati College of Medicine | 1910 | 1913 | A |
| Western Reserve University School of Medicine | .... | 1901 | A |
| **OKLAHOMA** | | | |
| University of Oklahoma School of Medicine | 1914 | 1917 | B |
| **OREGON** | | | |
| University of Oregon Department of Medicine | 1910 | 1915 | A |
| **PENNSYLVANIA** | | | |
| Hahnemann Medical College and Hospital | 1914 | 1917 | A |
| Jefferson Medical College | 1914 | 1917 | A |
| Temple University Department of Medicine | 1914 | 1918 | B |
| University of Pennsylvania School of Medicine | 1909 | 1910 | A |
| University of Pittsburgh School of Medicine | 1911 | 1913 | A |
| Woman's Medical College of Pennsylvania | 1914 | 1915 | A |
| **SOUTH CAROLINA** | | | |
| Medical College of the State of South Carolina | 1914 | 1916 | A |
| **SOUTH DAKOTA** | | | |
| University of South Dakota College of Medicine | 1908 | 1909 | A |
| **TENNESSEE** | | | |
| Meharry Medical College | 1914 | 1918 | B |
| Vanderbilt University Medical Department | 1914 | 1918 | A |
| University of Tennessee College of Medicine | 1914 | 1918 | A |
| **TEXAS** | | | |
| Baylor University College of Medicine | 1913 | 1918 | A |
| University of Texas Department of Medicine | 1910 | 1917 | A |
| **UTAH** | | | |
| University of Utah School of Medicine | 1909 | 1910 | A |
| **VERMONT** | | | |
| University of Vermont College of Medicine | 1912 | 1918 | A |
| **VIRGINIA** | | | |
| Medical College of Virginia | 1914 | 1915 | A |
| University of Virginia Department of Medicine | 1910 | 1917 | A |
| **WEST VIRGINIA** | | | |
| West Virginia University School of Medicine | 1911 | 1917 | A |
| **WISCONSIN** | | | |
| Marquette University School of Medicine | 1913 | 1915 | A |
| University of Wisconsin Medical School | .... | 1907 | A |

Total, 81.

The eleven following medical colleges[10] either have not announced the higher entrance requirements or evidence has not been received to show they are in effect for all students enrolled:

| | Rating |
|---|---|
| College of Physicians and Surgeons, San Francisco | C |
| Chicago Hospital College of Medicine | C |
| College of Physicians and Surgeons, Boston | C |
| Middlesex College of Medicine and Surgery, Cambridge, Mass. | C |
| Eclectic Medical University, Kansas City | C |
| Kansas City College of Medicine and Surgery | [11] |
| Kansas City University of Physicians and Surgeons | [12]C |
| St. Louis College of Physicians and Surgeons | C |
| Lincoln Medical College, Lincoln, Neb. | C |
| University of West Tenn. Coll. of Med. and Surg., Memphis | C |

### Scholarships in Medical Schools

As evidenced that provision is being made for worthy students, regardless of their financial status, 335 scholarships are reported this year in the following thirty-eight medical schools:

| | |
|---|---|
| University of Alabama School of Medicine, Mobile | 67 |
| Leland Stanford Junior University Medical School* | 3 |
| University of California Medical School,* San Francisco | 3 |
| University of Colorado School of Medicine,* Boulder | 1 |
| Yale University School of Medicine, New Haven, Conn.* | 2 |
| Hahnemann Medical College and Hospital of Chicago* | 6 |
| Loyola University School of Medicine, Chicago | 3 |

9. See "Medical College Finances," THE JOURNAL A. M. A., April 8, 1916, p. 1115.

10. For the standing of these and other medical colleges before state licensing boards, see Table D, THE JOURNAL A. M. A., April 13, 1918, p. 1084.

11. This college is an offshoot of the Eclectic Medical University; it has refused to have an inspection made. It is reported not recognized by the Missouri State Board of Health.

12. This college was formerly the Central College of Osteopathy; in 1916 it assumed the title Central College Medical Department, and took its present name in 1918.

| | |
|---|---|
| Rush Medical College, Chicago | 7 |
| University of Illinois College of Medicine, Chicago* | 7 |
| Indiana University School of Medicine, Indianapolis | 12 |
| State University of Iowa College of Medicine | 1 |
| University of Kansas School of Medicine* | 17 |
| Johns Hopkins University Medical Department, Baltimore | 6 |
| University of Maryland School of Medicine,* Baltimore | 6 |
| Harvard Medical School,* Boston | 30 |
| Boston University School of Medicine* | 50 |
| Detroit College of Medicine and Surgery | 8 |
| Washington University Medical School, St. Louis | 4 |
| Dartmouth Medical School,* Hanover, N. H. | 2 |
| Fordham University School of Medicine | 1 |
| University of Buffalo Department of Medicine* | 1 |
| University of Cincinnati College of Medicine* | 12 |
| Western Reserve University School of Medicine, Cleveland | 1 |
| University of Oregon Department of Medicine,* Portland | 3 |
| Hahnemann Medical College and Hospital of Philadelphia* | 12 |
| Jefferson Medical College of Philadelphia | 1 |
| Temple University Department of Medicine, Philadelphia | 3 |
| University of Pennsylvania School of Medicine,* Philadelphia | 3 |
| Woman's Medical College of Pennsylvania,* Philadelphia | 15 |
| Medical College of the State of South Carolina, Charleston | 8 |
| University of Tennessee College of Medicine, Memphis | 6 |
| Vanderbilt University Medical Department, Nashville, Tenn. | 4 |
| Baylor University College of Medicine, Dallas, Tex. | 5 |
| University of Texas Department of Medicine,* Galveston | 1 |
| University of Wisconsin Medical School* | 6 |
| University of Vermont College of Medicine* | 1 |
| Medical College of Virginia, Richmond | 15 |
| University of Virginia Department of Medicine, Charlottesville* | 2 |
| Total in 38 medical schools | 335 |

* Have loan funds also.

### Loan Funds

Besides the twenty-one colleges marked by an asterisk (*) in the above list which have loan funds for deserving but needy students, such funds are available also at the five following medical schools:

College of Medical Evangelists, Loma Linda, Calif.
Tulane University of Louisiana School of Medicine, New Orleans, La.
University of Missouri School of Medicine, Columbia, Mo.
University of Nebraska College of Medicine, Omaha, Neb.
Wake Forest College School of Medicine, Wake Forest, N. C.
University of North Dakota, School of Medicine, University, N. D.

### Hospital Intern Year

Eight medical colleges have adopted the requirement of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the sessions when the requirement became effective are as follows:

| | Session of |
|---|---|
| University of Minnesota Medical School | 1910-11 |
| Leland Stanford Jr. University School of Medicine | 1914-15 |
| Rush Medical College (University of Chicago) | 1914-15 |
| University of California Medical School | 1914-15 |
| Northwestern University Medical School | 1915-16 |
| University of Vermont College of Medicine | 1915-16 |
| College of Physicians and Surgeons, Medical Department of the University of Southern California | 1918-19 |
| Columbia Univ. Coll. of Physicians and Surgeons, New York | 1918-19 |

Eight state licensing boards now require that every candidate to be eligible for license to practice medicine in those states must have served at least one year as an intern in an approved hospital. The requirement became effective in Pennsylvania in 1914, in New Jersey in 1916, in Alaska in 1917 (unless applicant has been in general practice for four years), in North Dakota and Rhode Island in 1918, and will become effective in Illinois in 1921, in Michigan in 1922, and in Iowa in 1923.

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## CLASSIFICATION OF MEDICAL COLLEGES

Revised to June 10, 1918

### CLASS A—ACCEPTABLE MEDICAL COLLEGES

**ALABAMA**

University of Alabama School of Medicine.....Mobile

**CALIFORNIA**

Leland Stanford Junior Univ. School of Med..San Francisco
University of California Medical School.....San Francisco

**COLORADO**

University of Colorado School of Med.....Boulder-Denver

**CONNECTICUT**

Yale University School of Medicine.....New Haven

**DISTRICT OF COLUMBIA**

Georgetown University School of Medicine.....Washington
George Washington University Medical School..Washington
Howard University School of Medicine[1].....Washington

1. Rating raised to Class A June 6, 1910.

**GEORGIA**

Emory University School of Medicine[2].....Atlanta
University of Georgia Medical Department[3].....Augusta

**ILLINOIS**

Northwestern University Medical School.....Chicago
Rush Medical College (University of Chicago).....Chicago
University of Illinois College of Medicine.....Chicago

**INDIANA**

Indiana Univ. School of Med.....Bloomington-Indianapolis

**IOWA**

State University of Iowa College of Medicine....Iowa City
State Univ. of Iowa Coll. of Homeopathic Med....Iowa City

**KANSAS**

University of Kansas School of Med....Lawrence-Rosedale

**KENTUCKY**

University of Louisville Medical Department[4].....Louisville

**LOUISIANA**

Tulane Univ. of Louisiana School of Med....New Orleans

**MAINE**

Bowdoin Medical School.....Brunswick-Portland

**MARYLAND**

Johns Hopkins University Medical Department....Baltimore
University of Maryland School of Medicine and the College of Physicians and Surgeons.....Baltimore

**MASSACHUSETTS**

Boston University School of Medicine.....Boston
Medical School of Harvard University.....Boston
Tufts College Medical School.....Boston

**MICHIGAN**

Detroit College of Medicine and Surgery[5].....Detroit
University of Michigan Medical School.....Ann Arbor
University of Mich. Homeopathic Med. School....Ann Arbor

**MINNESOTA**

University of Minnesota Medical School.....Minneapolis

**MISSISSIPPI**

University of Mississippi School of Medicine*.....Oxford

**MISSOURI**

St. Louis University School of Medicine.....St. Louis
University of Missouri School of Medicine*.....Columbia
Washington University Medical School.....St. Louis

**NEBRASKA**

John A. Creighton Medical College[6].....Omaha
University of Nebraska College of Medicine.....Omaha

**NEW HAMPSHIRE**

Dartmouth Medical School*.....Hanover

**NEW YORK**

Albany Medical College.....Albany
Columbia Univ. Coll. of Phys. and Surgs....New York City
Cornell University Medical College.....New York City
Fordham University School of Medicine[7].....New York City
Long Island College Hospital[8].....Brooklyn
Syracuse University College of Medicine.....Syracuse
University and Bellevue Hospital Med. Coll..New York City
University of Buffalo Department of Medicine.....Buffalo

**NORTH CAROLINA**

University of North Carolina School of Med.* Chapel Hill
Wake Forest College School of Medicine*....Wake Forest

**NORTH DAKOTA**

University of North Dakota School of Medicine*..University

**OHIO**

Ohio State University College of Medicine.....Columbus
University of Cincinnati College of Medicine.....Cincinnati
Western Reserve University School of Medicine..Cleveland

* Gives only the first two years of the medical course.
2. Rating raised to Class A Feb. 24, 1914; formerly the Atlanta Medical College.
3. Class A rating restored Feb. 24, 1913.
4. Rating raised to Class A June 6, 1910.
5. Class A rating restored June 21, 1914.
6. Class A rating restored Feb. 4, 1917.
7. Class A rating restored Feb. 24, 1914.
8. Class A rating restored June 21, 1914.

OREGON

University of Oregon Medical School.....Portland

PENNSYLVANIA

Hahnemann Medical College and Hospital.....Philadelphia
Jefferson Medical College of Philadelphia.....Philadelphia
University of Pennsylvania School of Med....Philadelphia
University of Pittsburgh School of Medicine*.....Pittsburgh
Woman's Medical College of Pennsylvania.....Philadelphia

SOUTH CAROLINA

Medical College of the State of South Carolina[10]..Charleston

SOUTH DAKOTA

University of South Dakota College of Medicine*..Vermilion

TENNESSEE

University of Tennessee College of Medicine[11].....Memphis
Vanderbilt University Medical Department.....Nashville

TEXAS

Baylor University College of Medicine[12].....Dallas
University of Texas Department of Medicine.....Galveston

UTAH

University of Utah School of Medicine*.....Salt Lake City

VERMONT

University of Vermont College of Medicine.....Burlington

VIRGINIA

Medical College of Virginia.....Richmond
University of Virginia Department of Med....Charlottesville

WEST VIRGINIA

West Virginia Univ. School of Medicine*[13].....Morgantown

WISCONSIN

Marquette University School of Medicine[14].....Milwaukee
University of Wisconsin Medical School*.....Madison

Total, 69.

## CLASS B—COLLEGES NEEDING GENERAL IMPROVEMENTS TO BE MADE ACCEPTABLE

ARKANSAS

University of Arkansas Medical Department.....Little Rock

CALIFORNIA

College of Medical Evangelists[15]....Loma Linda-Los Angeles
University of Southern California Medical Department (College of Physicians and Surgeons).....Los Angeles

ILLINOIS

Chicago College of Medicine and Surgery, School of Medicine of Loyola University[16].....Chicago
Hahnemann Medical College and Hospital[17].....Chicago

NEW YORK

New York Homeopathic Medical College and Flower Hospital[18].....New York City
New York Medical College and Hospital for Women[19] .....New York City

NORTH CAROLINA

Leonard Medical School*[20].....Raleigh

OHIO

Eclectic Medical College.....Cincinnati
Ohio State Univ. Coll. of Homeopathic Med.[21].....Columbus

OKLAHOMA

Univ. of Oklahoma School of Med.[22]..Norman-Oklahoma City

PENNSYLVANIA

Temple University Department of Medicine[23]....Philadelphia

TENNESSEE

Meharry Medical College[24].....Nashville

TEXAS

Fort Worth School of Medicine[25].....Fort Worth

Total, 14.

## CLASS C—COLLEGES REQUIRING A COMPLETE REORGANIZATION TO MAKE THEM ACCEPTABLE

CALIFORNIA

College of Physicians and Surgeon.....San Francisco
Oakland College of Medicine and Surgery[26].....Oakland

ILLINOIS

Chicago Hospital College of Medicine.....Chicago
Jenner Medical College[27].....Chicago

MASSACHUSETTS

College of Physicians and Surgeons.....Boston
Middlesex College of Medicine and Surgery[29].....Cambridge

MISSOURI

Kansas City University of Phys. and Surgs.[30]....Kansas City
Eclectic Medical University[31].....Kansas City
National Univ. of Arts and Sciences Med. Dept.[32]...St. Louis
St. Louis College of Physicians and Surgeons[33]....St. Louis

NEBRASKA

Lincoln Medical College[34].....Lincoln

TENNESSEE

University of West Tenn. Coll. of Med. and Surg..Memphis

Total 12.

## CLASSIFICATION OF CANADIAN MEDICAL COLLEGES

CLASS A

University of Toronto Faculty of Medicine....Toronto, Ont.
McGill University Faculty of Medicine.....Montreal, Que.

CLASS B

University of Manitoba, Manitoba Medical College[35].....Winnipeg, Man.
Dalhousie University Faculty of Medicine.....Halifax, N. S.
Queen's University Faculty of Medicine[36].....Kingston, Ont.
Western University Faculty of Medicine[37].....London, Ont.
Montreal School of Medicine and Surgery....Montreal, Que.
Laval University Faculty of Medicine.....Quebec, Que.

The University of Alberta at Edmonton, besides the premedical year, gives only the first two years of the medical course as measured by that of the medical schools of the United States. It has not been inspected.

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* Gives only the first two years of the medical course.

9. Rating raised to Class A June 6, 1910.
10. Class A rating restored Feb. 6, 1916.
11. Rating raised to Class A June 21, 1914.
12. Rating raised to Class A June 12, 1916.
13. Class A rating restored Feb. 4, 1917.
14. Rating raised to Class A Feb. 15, 1915.
15. Rating raised to Class B. Feb. 3, 1918.
16. The Chicago College of Medicine and Surgery was merged with the Bennett Medical College, School of Medicine of Loyola University, in September, 1917, retaining the combined title as now given.
17. Rating dropped to Class B June 3, 1912.
18. Rating dropped to Class B Feb. 15, 1915.
19. Rating in Class B restored June 14, 1918; it had been dropped from Class B to Class C June 3, 1912. Reported closed in 1918.
20. Rating raised to Class B June 21, 1914.
21. Rating raised to Class B Feb. 4, 1917.
22. Rating dropped to Class B June 3, 1912.
23. Rating raised to Class B June 6, 1910.
24. Rating dropped to Class B Feb. 24, 1914.
25. Rating restored to Class B May 10, 1914. In 1918 it merged with the Baylor University College of Medicine.
26. Rated in Class B June 6, 1910; rating dropped to Class C Feb. 3, 1918.
27. Rated in Class C when last inspected—1912. Has recently refused reinspection. In December, 1917, it transferred its students to the Chicago Hospital College of Medicine. Both institutions are reported as "not in good standing" by the Illinois Department of Registration and Education.
29. This is the medical department of the so-called "University of Massachusetts." It was rated in Class C, Feb. 4, 1918.
30. Formerly the Central College of Osteopathy; in 1917 under an amended charter took the name of Central College Medical Department; assumed present title in 1918. Rated in Class C, March 15, 1918.
31. An offshoot of this institution—the Kansas City College of Medicine and Surgery—was organized in 1915. It is reported not recognized by the Missouri State Board of Health. Since it is an offshoot of a Class C institution reported not recognized by the Missouri State Board of Health, no higher rating could be granted it pending an inspection which it has refused.
32. Formerly known as the American Medical College. Extinct May, 1918.
33. Rating dropped to Class C July 1, 1909. In 1915 it merged with the Medical Department of the National University of Arts and Sciences, but in 1917 was reestablished.
34. Formerly known as the Cotner University Medical College.
35. Rating dropped to Class B Feb. 6, 1916.
36. Rating dropped to Class C Feb. 6, 1916; restored to Class B Feb. 3, 1918.
37. Rating raised to Class B Feb. 4, 1917.

## DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, several of which do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination, regardless as to whether the college is sectarian or not. In a few instances in which such reports were not received, the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1917. Extracts of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's estimate for 1916. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of collegiate work. Eight states, Alaska (Ter.), Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania and Rhode Island require a year's hospital internship before a license will be granted.

### ALABAMA

Alabama, population 2,348,273, has one medical college, the School of Medicine of the University of Alabama, located in Mobile, a city with a population of 58,221.

In order to secure licenses to practice medicine in Alabama, students matriculating in the session of 1915-16 and thereafter must have completed two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine.

#### Mobile

University of Alabama School of Medicine, 550 St. Anthony Street.—Organized in 1859 as the Medical College of Alabama. Classes were graduated in 1861 and in all subsequent years except 1862 to 1868 inclusive. It was reorganized as the Medical Department of the University of Alabama in 1897. All property was transferred to the University of Alabama in 1907 when the present title was assumed. Two years of college work are required for admission. The faculty consists of 14 professors and 28 lecturers and assistants, a total of 42. The course of study covers four years of thirty-two weeks each. The total fees for each of the four years, respectively, are $165, $160, $160 and $185. The Dean is Dr. T. H. Frazer. The total registration for 1917-1918 was 44, graduates, 11. The fifty-third session begins Oct. 3, 1918, and ends June 4, 1919.

### ARKANSAS

Arkansas, population 1,753,033, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 57,343.

To secure licenses to practice medicine in Arkansas, students matriculating in the session of 1918-19 and thereafter must have completed two years of collegiate work, including college courses in physics, chemistry, biology and a modern language before beginning the study of medicine. This applies to all graduates of 1922 and thereafter.

#### Little Rock

University of Arkansas Medical Department, Markham and Center Streets.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class was graduated in 1880. The faculty consists of 20 professors and 36 lecturers and assistants, total 56. Entrance requirements are two years of collegiate work beyond a four-year high school course. The course of study covers four years of thirty-two weeks each. The fees are $50 each year. The Dean is Dr. Morgan Smith. Total registration 1917-1918 was 32; graduates, 21. The fortieth session begins Sept. 16, 1918, and ends June 4, 1919.

### CALIFORNIA

California, population 2,983,843, has five medical colleges. Three are located in San Francisco, a city of 463,516 inhabitants. They are Leland Stanford Junior University School of Medicine, College of Medicine of the University of California, and the College of Physicians and Surgeons. The College of Physicians and Surgeons, Medical Department of the University of Southern California is situated in Los Angeles, population 503,812. The College of Medical Evangelists is located at Loma Linda and Los Angeles.

To secure licenses to practice medicine in California under the "physician's and surgeon's" certificate, students matriculating in medical colleges in and after the session of 1915-16, prior to such matriculation, must have completed at least one year of recognized collegiate work including college courses in physics, chemistry, biology and a modern language. This applies to all graduates of 1919 and thereafter.

#### Berkeley-San Francisco

University of California Medical School, University Campus, Berkeley; Second and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1865. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment, became a clinical department. This Los Angeles portion was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged, and elective chairs in homeopathic materia medica and therapeutics were provided for. Two years of collegiate work are required for admission. The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco. The faculty is composed of 45 professors and 100 associates and assistants, a total of 137. The course covers five years of nine months each, the fifth year to consist of an internship or of special work in a department of the medical school. Fees for the four years, respectively, are $200, $155, $150 and $150. The Dean is Dr. Herbert C. Moffitt, San Francisco. Total registration for 1917-1918 was 150; no graduates this year; 22 students who completed their fourth year work required to complete senior year as hospital intern before medical degree is granted. The forty-sixth session begins Oct. 1, 1918, and ends June 4, 1919.

#### Loma Linda-Los Angeles

College of Medical Evangelists.—Organized in 1909. The faculty numbers 50. The first class graduated in 1914. The course extends over four years of nine months each. Two years of college work are required for admission. The total fees for the four years, respectively, are $166, $161, $161 and $161. The Dean is Dr. P. T. Magan. The total registration for 1917-18 was 62; graduates, 21. The tenth session begins Sept. 1, 1918, and ends May 29, 1919.

#### Los Angeles

College of Physicians and Surgeons, Medical Department of the University of Southern California, 516 East Washington Street.—Organized in 1903, first class graduated in 1905; became Medical Department, University of Southern California, Aug. 11, 1909. The course covers four years of nine months each. Two years of collegiate work are required for admission. The faculty consists of 21 professors and 82 associate professors, lecturers and instructors, a total of 103. The fees for the four years, respectively, are $220, $217, $202 and $227. The Dean is Dr. Charles W. Bryson. The registration for 1917-18 was 92, graduates, 28. The next session begins Sept. 3, 1918, and ends June 12, 1919.

#### San Francisco

College of Physicians and Surgeons, 344 Fourteenth Street.—Organized in 1896. The first class graduated in 1897. The faculty numbers 40. The course covers four years of nine months each. The fees for each of the first three years are $192.50 and $217.50 for the fourth year. The Dean is Dr. H. D'Arcy Power. Registration for 1917-18 was 56; graduates, 16. The twenty-second session begins Aug. 12, 1918, and ends June 5, 1919. *Reported not recognized by licensing boards of thirty-six states.*

#### San Francisco-Palo Alto

Leland Stanford Junior University School of Medicine, University Campus, Palo Alto, and Sacramento and Webster Streets, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The first class was graduated in 1913. The faculty consists of 33 professors and 39 lecturers, assistants, etc., a total of 72. Three years of collegiate work are required for admission. The school has the quarter system and the completion of any three quarters constitutes a college year. The course covers five years of nine months each, including a year of practical or intern work The total fees for the first four years, respectively, are $200, $155, $150 and $150. The Dean is Dr. W. Ophüls, San Francisco. The total registration for 1917-18 was 82; graduates, 7. The ninth session begins Oct. 1, 1918, and ends June 17, 1919.

### COLORADO

Colorado, with a population of 975,190, has one medical college, the University of Colorado School of Medicine. The first two years of the course are given at Boulder, the seat of the university, while the last two, or clinical years, are given in Denver, which has a population of 260,800.

The Colorado State Board of Medical Examiners will register without further examination graduates of medical

colleges in good standing who present licenses issued after examination by any other licensing board. The law permits any one, graduate or nongraduate, to try the board's written examination. No graduate of 1914 or thereafter is eligible to obtain a license in Colorado, or indorsement of his credentials, unless he graduated from a medical college which, at the time he matriculated, required at least two years' study, without conditions, in an accredited college of liberal arts, and this work must have included courses in physics, chemistry, biology and one modern language.

### Boulder-Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. The faculty embraces 11 professors, 19 associate and assistant professors, and 36 lecturers, instructors and assistants, a total of 66. The work embraces a graded course of four years of nine months each. The entrance requirements are two years of college work counting toward a degree in arts in an accredited college or university. The tuition is $75 per year for residents of Colorado, $100 for nonresidents. Laboratory fees are $10 for each of the first two years. The Dean is Dr. Charles N. Meader. The total registration for 1917-18 was 77; graduates, 8. The thirty-seventh session for the Denver division, comprising the last two years, began June 17, 1918, and ends Feb. 7, 1919. The session of the Boulder division, for the first two years begins Sept. 30, 1918, and ends June 4, 1919.

## CONNECTICUT

Connecticut, with a population of 1,254,926, has one medical college, Yale University, School of Medicine, located in New Haven, population 149,685.

Candidates for license to practice medicine in Connecticut who graduate in 1914 or thereafter are not eligible unless, prior to entering on the study of medicine, they had completed, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology.

### New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 150 York Street and Congress Avenue and Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. The faculty consists of 23 professors and 61 lecturers and assistants, a total of 84. The requirements for admission are two years of collegiate work plus evidence of satisfactory completion of courses in general physics, general inorganic chemistry, general biology, organic chemistry and physical chemistry or laboratory physics, all reasonably equivalent to the courses in these subjects in Yale University. The student also must have a reading knowledge of German. The course covers four years of nine months each. The fees for the four years, respectively, are approximately $205, $200, $200 and $210. The Dean is Dr. George Blumer. The total registration for 1917-18 was 71; graduates, 8. The 106th session begins Sept. 26, 1918, and ends June 18, 1919.

## DISTRICT OF COLUMBIA

The District of Columbia, population 366,631, has three medical colleges; George Washington University Medical School, Georgetown University, School of Medicine and Howard University, School of Medicine.

### Washington

GEORGE WASHINGTON UNIVERSITY MEDICAL SCHOOL, 1325 H Street, N.-W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name National Medical College. Classes were graduated in 1826 and in all subsequent years, except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. The faculty is composed of 40 professors and 55 instructors, demonstrators and assistants, a total of 95. Two years of collegiate work are required for admission. The course covers four years of thirty-two weeks each. The total fees are $175 each year. The Dean is Dr. William C. Borden. The total registration for 1917-18 was 107; graduates, 13. The ninety-seventh session begins Sept. 25, 1918, and ends June 11, 1919.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 920 H Street, N.-W.—Organized in 1851. The first class graduated in 1852. The faculty contains 23 professors, 67 instructors and assistants; total, 90. Two years of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for the first year are $190, and for each of the other three years, $175. The Dean is Dr. George M. Kober. The registration for 1917-18 was 69; graduates, 17. The sixty-eighth session begins Sept. 24, 1918, and ends June 11, 1919.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Colored students compose a majority of those in attendance. The faculty comprises 16 professors and 22 lecturers and assistants, 38 in all. The admission requirements are two years of collegiate work, including physics, chemistry, botany and zoology, English and two years of French or German. The course covers four years of thirty-two weeks each. The fees of each of the four sessions, respectively, are $140, $130, $130 and $137. The Dean is Dr. Edward A. Balloch. Registration for 1917-18 was 114; graduates, 27. The fifty-first session begins Oct. 1, 1918, and ends June 4, 1919.

## GEORGIA

Georgia, population 2,875,953, has two medical colleges, University of Georgia, Medical Department, located in Augusta, population 50,245, and the Emory University School of Medicine in Atlanta, a city of 190,558.

### Atlanta

EMORY UNIVERSITY SCHOOL OF MEDICINE, 94 N. Butler Street.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the Medical Department of Emory University in 1915; assumed present title in 1917. Two years of collegiate work are required for entrance. The faculty numbers 106. The course of study is four years of thirty-two weeks each. The fees for each of the four years, respectively, are $172, $160, $155 and $180. The Dean is Dr. W. S. Elkin. Total registration for 1917-18 was 128; graduates, 27. The next session begins Sept. 23, 1918, and ends June 1, 1919.

### Augusta

UNIVERSITY OF GEORGIA, MEDICAL DEPARTMENT, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the university in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. The faculty includes 18 professors and 35 assistants, 53 in all. Two years of collegiate work are required for entrance. The course is four years of thirty-four weeks each. Fees are $150 each year for nonresidents of Georgia, for residents the total fees for each of the four years are $60. The Dean is Dr. W. H. Doughty, Jr. The total registration for 1917-18 was 70; graduates, 6. The Eighty-seventh session begins Sept. 8, 1918, and ends June 5, 1919.

## ILLINOIS

Illinois, population 6,193,626, has six medical colleges, two of which give instruction at night, all located in Chicago, a city of 2,497,722 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Hahnemann Medical College and Hospital, Chicago College of Medicine and Surgery (School of Medicine of Loyola University), and the Chicago Hospital College of Medicine.

To be eligible for license to practice medicine in Illinois, students matriculating in the sessions of 1915-16 and of 1918-19, in addition to an accredited four-year high school education, must have completed, respectively, one year and two years of collegiate work including courses in physics, chemistry, biology and a modern language, to be taken either in a preliminary year given by a recognized medical college, or in an approved college of liberal arts. Graduates of 1923 and thereafter must have completed also a year's internship in a hospital.

### Chicago

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago. The first class graduated in 1844. The faculty is composed of 107 professors, 167 associates, instructors, etc., a total of 274. The requirements for admission are two years of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes, and to 120 students in each of the clinical years. No application for admission is accepted after September 1. The school operates under the "quarter system" in which the year is divided into four quarters of twelve weeks each; the completion of the work of these quarters gives credit for a college year. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshman and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison streets. The tuition fees are $180 each year. A matriculation fee of $5 is paid but once, and there are incidentals amounting to from $5 to $7 annually. The Dean is Dr.

John M. Dodson. Total registration 1917-18 was 550; graduates, 42. Seventy-seven other students completed the work of the fourth year but will not receive their degrees till the hospital internship has been completed. The seventy-fifth session begins Oct. 1, 1918, and ends June 14, 1919.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 2421 South Dearborn Street.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. The faculty comprises 70 professors and 100 lecturers and assistants, a total of 170. The requirements for admission are such as will admit to the College of Liberal Arts of Northwestern University, plus two years of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each. The fees for the four years, respectively, are $190, $195, $190 and $206. The Dean is Dr. Arthur I. Kendall. The total registration for 1917-18 was 281; graduates, 62. The fifty-ninth session begins Oct. 1, 1918, and ends June 7, 1919.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, Honore and Congress Streets.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. The American Medical Missionary College was absorbed in 1910. Two years of collegiate work are required for admission. The year is divided into three divisions of four months each, the completion of the work of any two divisions counting as a college year. The faculty is composed of 29 professors, 75 assistants and instructors, a total of 104. The total fees for the four years, respectively, are $165, $160, $150 and $165. The Dean is Dr. Albert C. Eycleshymer. The total registration for 1917-18 was 270; graduates, 30. The thirty-seventh session begins Oct. 1, 1918, and ends June 1, 1919.

CHICAGO COLLEGE OF MEDICINE AND SURGERY, SCHOOL OF MEDICINE OF LOYOLA UNIVERSITY, Chicago.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Eclecticism dropped and title of Bennett Medical College assumed in 1909. First class graduated in 1870, and a class graduated each subsequent year. Absorbed the Illinois Medical College in 1910 and the Reliance Medical College in 1911. In 1910 it became by affiliation the School of Medicine of Loyola University; the university assumed full control in 1915. Took over by purchase the Chicago College of Medicine and Surgery in 1917 and assumed present title. Two years of college work are required for admission. The dean is Dr. Lawrence Ryan. The total enrolment for 1917-18 was 448; graduates, 115. The next session begins Oct. 1, 1918, and ends May 31, 1919.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF CHICAGO, 2811 Cottage Grove Avenue.—Organized in 1859. The first class was graduated in 1861. Absorbed the Chicago Homeopathic Medical College in 1904. The faculty includes 57 professors and 29 lecturers, assistants, etc., a total of 86. Two years of collegiate work are required for admission. The course extends over four years of eight months each. The tuition fees for the four years, respectively, are $176, $161.50, $176.50 and $191.50. The Dean is Dr. Joseph P. Cobb. The total registration for 1917-18 was 51; graduates, 15. The fifty-ninth session begins June 3, 1918, and ends June 1, 1919.

CHICAGO HOSPITAL COLLEGE OF MEDICINE, an afternoon and night school, located at 3832 Rhodes Avenue.—Organized in 1911; chartered in 1912. In December, 1917, the classes of the Jenner Medical College were transferred to it. Not recognized by the Illinois Department of Registration and Education. Total registration for 1917-18 was 95; graduates, about 45. *Official reports indicate that the diplomas from this college are not recognized by the licensing boards of thirty-seven states.*

## INDIANA

Indiana, population 2,826,154, has one medical college, the Indiana University School of Medicine, located at Indianapolis, a city of 271,708 people, except that the work of the first year is offered also at Bloomington, the seat of the University.

Candidates for license to practice medicine in Indiana who matriculated between Jan. 11, 1910, and Jan. 1, 1911, must have completed one year of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine. Those matriculating subsequent to Jan. 1, 1911, must have completed two years of work in a recognized college of liberal arts.

### Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879), merged into it. The first class was graduated in 1908. The faculty consists of 68 professors and 95 lecturers, associates and assistants, a total of 163. Two years of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees for the four years, respectively, are $100, $100, $130 and $130. A fifth optional intern year leading to the "M.D. cum laude" has been added. The Secretary at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1917-18 was 215; graduates, 35. The next session begins Sept. 15, 1918, and ends May 31, 1919.

## IOWA

Iowa, population 2,224,771, has two medical colleges. The College of Medicine and the College of Homeopathic Medicine of the State University of Iowa, both located in Iowa City, population 12,033.

Candidates for license to practice medicine in Iowa who graduated subsequent to Jan. 1, 1915, must have completed two years of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a foreign language.

### Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. The faculty is made up of 28 professors, 23 lecturers, demonstrators and assistants, a total of 51. Two years of collegiate work, including courses in physics, chemistry, biology and French or German, are required for admission. The course of study covers four years of thirty-six weeks each. The tuition fee for residents of Iowa is $85 per year and for nonresidents $100, plus a matriculation fee of $10 and a graduation fee of $10. The Dean is Dr. Lee Wallace Dean, Iowa City. Total registration for 1917-18 was 189; graduates, 27. The forty-ninth session begins Sept. 16, 1918, and ends June 6, 1919.

STATE UNIVERSITY OF IOWA COLLEGE OF HOMEOPATHIC MEDICINE.—Organized in 1877. The first class graduated in 1878. Class each subsequent year except 1914. The faculty is composed of 14 professors and 8 lecturers and assistants, a total of 22. The work of the first two years is taken in classes with the students of the College of Medicine of the State University of Iowa, and it has the same entrance and fee requirements. The Dean is Dr. George Royal. Total registration for 1917-18 was 9; graduates, 3. The forty-first session begins Sept. 16, 1918, and ends June 6, 1919.

## KANSAS

Kansas, population 1,840,707, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,915, and the last two years in Rosedale, a suburb of the two Kansas Cities, which together have a population of 397,284.

Candidates for license to practice medicine in Kansas who matriculated in the session of 1910-11 and thereafter must present credentials showing that they matriculated in and graduated from a medical college which required for admission at least one year of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course. This applies to graduates of 1914 and thereafter. Students matriculating in 1918-19 (graduates of 1922) and thereafter will be required to have completed two years of premedical college work.

### Lawrence and Rosedale

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Rosedale. Absorbed Kansas Medical College in 1913. The faculty, including lecturers and clinical assistants, numbers 65. The requirements for admission are two years of collegiate work. The course covers four years of nine months each. The total fees are, for each of the first two years, $60, and for the last two years $100, and for nonresidents, $80 for each of the first two years. The Dean is Dr. S. J. Crumbine; Associate Dean, Dr. M. T. Sudler. The total registration for 1917-18 was 145; graduates, 18. The thirty-ninth session begins Sept. 16, 1918, and ends June 11, 1919.

## KENTUCKY

Kentucky, population 2,386,866, has one medical college, the University of Louisville Medical Department, situated in Louisville, a city of 238,910 inhabitants.

To be eligible for license to practice medicine in Kentucky all students matriculating in and after the session of 1914-15 must have completed, in addition to an accredited four-year high school course, at least one year's work in an approved college of liberal arts, including college courses in physics, chemistry, biology and a modern language.

### Louisville

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT, First and Chestnut Streets.—Organized in 1837 as the Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 the present name was assumed. In 1907 it absorbed the Kentucky University Medical Department. In 1908 it absorbed the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. One year of collegiate work is required for admission. It has a faculty of 31 professors and 81 lecturers and assistants, a total of 112. The course covers four years of thirty-two weeks each. The fees for each of the four years, respectively, are $175, $176, $179.25 and $182.35. The Dean is Dr. Henry Enos Tuley. The total registration for 1917-18 was 99; graduates, 16. The next session begins Sept. 24, 1918, and ends June 5, 1919.

## LOUISIANA

Louisiana, having a population of 1,843,042, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 371,747.

Candidates for license to practice medicine in Louisiana who graduate in 1919 and 1922 must present evidence that they have successfully completed, at an approved college or university, respectively, one year and two years of work including biology, physics, chemistry and a modern language, before entering on the study of medicine. These requirements apply to all students who matriculated, respectively, in 1915 and 1918.

### New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-65, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. The faculty has 50 professors and 81 assistant professors, instructors, demonstrators, etc., a total of 131. The course covers four years of thirty-two weeks each. Two years of collegiate work are required for admission. Total fees for each of the four years, respectively, are $200, $200, $200 and $230. The Dean is Dr. Isadore Dyer. The total registration for 1917-18 was 275; graduates, 63. The eighty-fourth session begins Sept. 23, 1918, and ends June 4, 1919, for freshmen and sophomores. Junior and senior classes began in June, 1918, and will end in February, 1919.

## MAINE

Maine, population 774,914, has one medical college, the Bowdoin Medical School, located in Brunswick and Portland, the latter having a population of 68,867.

### Brunswick-Portland

BOWDOIN MEDICAL SCHOOL. The Medical Department of Bowdoin College. The first two years are given at Bowdoin College, Brunswick, the last two at Portland, building located on Chadwick Street.—Organized in 1820 as the Medical School of Maine. The first class graduated in 1821. Present title assumed in 1915. The faculty numbers 57. Two years of collegiate work, including courses in physics, chemistry and biology are required for admission. The course covers four years of eight months each. The total fees for each of the four years, respectively, are $130, $126, $110 and $105. The Dean is Dr. Addison S. Thayer, 10 Deering Street, Portland. The total number of students in 1917-18 was 54; graduates, 18. The ninety-eighth session begins Oct. 10, 1918, and ends June 1, 1919.

## MARYLAND

Maryland, with a population of 1,368,240, contains two medical colleges, located in Baltimore, a city with 589,621 inhabitants. They are as follows: Johns Hopkins University Medical Department, and the University of Maryland School of Medicine and College of Physicians and Surgeons, the last two having been merged.

To be eligbile to practice medicine in Maryland, all students matriculating in the session of 1914-15 and 1918-19, in addition to a four-year high school education, must have completed, respectively, one year and two years of college work including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

### Baltimore

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT, Washington and Monument Streets.—Organized in 1893. The first class graduated in 1897. The faculty consists of 50 professors and 131 clinical professors, etc., a total of 181. The requirements for admission demand that the applicant either has (*a*) completed the chemical-biologic course which leads to the A.B. degree in the university, or (*b*) graduated at an approved college or scientific school and has a knowledge of French and German, physics, chemistry and biology, such as may be obtained from a year's course. The course extends over four years of eight and one-half months each. The total fees are $257 each year. The Dean is Dr. J. Whitridge Williams. Total registration for 1917-18 was 375; graduates, 87. The twenty-sixth sessions begins Oct. 1, 1918, and ends June 10, 1919.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Green Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. The combined faculty numbers 189. Two years of collegiate work are required for admission. The course covers four years of eight months each. The total fees are $185 each year; graduation fee, $30. The Dean is Dr. J. M. H. Rowland. Total registration for 1917-18 was 266; graduates, 49. The one-hundred and twelfth session begins Oct. 1, 1918, and ends June 2, 1919.

## MASSACHUSETTS

Massachusetts, population 3,747,564, has five medical colleges: Medical School of Harvard University, Boston University School of Medicine, Tufts College Medical School, College of Physicians and Surgeons and the Middlesex College of Medicine and Surgery. They are all situated in Boston, a city of 756,476, except the last named which is in Cambridge.

### Boston

MEDICAL SCHOOL OF HARVARD UNIVERSITY, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 76 professors and 139 instructors and assistants, a total of 215. Candidates for admission must present a college degree or two years of work leading to such a degree with standing in the upper third of the class. The college work must include a year of physics, biology, general chemistry, a half year of organic chemistry, and a reading knowledge of French or German. The total fees for each of the four years are $230, $225, $225 and $225. The Dean is Dr. David L. Edsall. The total registration for 1917-18 was 384; graduates, 106. The one hundred and thirty-seventh sessions begins Sept. 23, 1918, and ends May 31, 1919.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. Became nonsectarian in 1918. Two years of collegiate work are required for admission. The faculty includes 23 professors, 46 associates, etc., making a total of 69. The course covers four years of eight months each. Total fees for each of the four years, respectively, are $175, $162, $160 and $180. The Dean is Dr. John P. Sutherland. Total registration for 1917-18 was 58; graduates, 15. The forty-sixth session begins for the first three classes Oct. 3, 1918, and ends June 4, 1919. For the senior class the session began June 3, 1918, and will end about Feb. 1, 1919.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. It has a faculty of 43 professors and 81 assistants, lecturers, etc., a total of 124. One year of collegiate work is required for admission. Two years of college work wil be required for the session of 1918-19 and thereafter. The course covers four years of eight months each. The total fees for each of the four years are $175, $164, $155 and $155. The Dean is Dr. Charles F. Painter. Total registration for 1917-18 was 372; graduates, 79. The twenty-third session begins Sept. 23, 1918, and ends May 29, 1919.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. Total attendance of medical students during 1916-17 was about 53. There were 11 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of thirty-nine states.*

### Cambridge

MIDDLESEX COLLEGE OF MEDICINE AND SURGERY, Cambridge.—Organized in 1914 under the charter of the Worcester Medical College, which became extinct in 1859. A class was graduated in 1915 and each subsequent year. Was closely related in its interests with an osteopathic college and granted a liberal advanced standing for work done in that and other osteopathic colleges. During 1917-18 it had a total enrolment of 84; graduates, 25. *This college has been reported as not recognized by the licensing boards of thirty-one states.*

## MICHIGAN

Michigan, population 3,074,560, has three medical colleges. Two of these, the University of Michigan Department of Medicine and Surgery and the Homeopathic Medical College of the University of Michigan, are located at Ann Arbor, a city of 14,979 people. The Detroit College of Medicine and Surgery is located at Detroit, a city of 571,784 inhabitants.

To be eligible for license to practice medicine in Michigan, all students matriculating in and after the sessions of 1914-15 and 1918-19, in addition to an accredited four-year high school education, must have completed, respectively, one year and two years of work in an approved college of liberal arts, including college courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

### Ann Arbor

University of Michigan Medical School.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. It has a faculty composed of 25 professors and 74 associates, instructors, etc., a total of 99. The entrance requirements are two years of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of one modern language. The curriculum embraces four years of nine months each. The total fees for Michigan students for each of the four years, respectively, are $115, $105, $105 and $115, and for nonresidents, respectively, $150, $125, $125 and $135. The Dean is Dr. Victor C. Vaughan. The total registration for 1917-18 was 339; graduates, 66. The sixty-ninth session begins Oct. 1, 1918, and ends June 26, 1919.

University of Michigan Homeopathic Medical School.—Organized in 1875. The first class graduated in 1877. The work of the first two years is taken in the same classes with the Medical School of the University of Michigan, and the fees charged are the same. The entrance requirements are two years of collegiate work. The Dean is Dr. W. B. Hinsdale. The total registration for 1917-18 was 36; graduates, 14. The next session begins Oct. 1, 1918, and ends June 26, 1919.

### Detroit

Detroit College of Medicine and Surgery, 250 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. In 1918 it became a municipal institution under the control of the Detroit Board of Education. Entrance requirements are two years of collegiate work. The faculty embraces 21 professors, 140 lecturers, etc., a total of 161. The course covers four years of eight months each. The fees for the four years, respectively, are $155, $150, $150 and $175. The Dean is Dr. W. H. MacCraken. The total registration for 1917-18 was 166; graduates, 20. The thirty-fourth session begins Oct. 12, 1918, and ends June 7, 1919.

## MINNESOTA

Minnesota, population 2,296,024, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis, a city of 363,454 inhabitants.

Candidates for license to practice medicine in Minnesota who graduated subsequent to June 1, 1912, in addition to an accredited four-year high school education, must have completed two years of work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

### Minneapolis

University of Minnesota Medical School.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. The faculty includes 65 professors and 94 instructors and assistants, a total of 159. The curriculum covers four years of nine months each and a year's internship in an approved hospital. The entrance requirements are two years of university work, which must include one year each of physics, general chemistry, qualitative analysis, zoology or botany, and French or German, all in addition to a four-year high school course, including two years of Latin. Students entering hereafter will be required to secure a degree of B.S. or A.B. before the M.D. is granted. Total fees are $150 each year. The Dean is Dr. E. P. Lyon. The total registration for 1917-18 was 280; graduates, 38. The thirtieth session begins Sept. 10, 1918, and ends June 12, 1919.

## MISSISSIPPI

Mississippi, population 1,964,122, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 2,014 inhabitants.

Candidates for license to practice medicine in Mississippi who matriculate in the sessions of 1915-16 and of 1919-20 and thereafter, in addition to a standard four-year high school education, must have completed, respectively, one year and two years of work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

### Oxford

University of Mississippi School of Medicine.—Organized in 1903. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements for 1917-18 are one year of collegiate work in addition to an accredited four-year high school education; thereafter, two years of college work will be required. The total fees each year are $122. The faculty numbers 18. The Dean is Dr. W. S. Leathers. The total registration for 1917-18 was 57. The sixteenth session begins Sept. 18, 1918, and ends June 3, 1919.

## MISSOURI

Missouri, population 3,420,143, has six medical colleges. St. Louis, population 757,309, contains three of these, viz., the School of Medicine of St. Louis University, Washington University Medical School, and the St. Louis College of Physicians and Surgeons. Kansas City, with a population of 297,847, has two colleges, the Kansas City College of Medicine and Surgery and the Kansas City University of Physicians and Surgeons. The School of Medicine of the University of Missouri is at Columbia, a town of 12,103 people.

### Columbia

University of Missouri School of Medicine.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. The faculty includes 10 professors and 15 assistant professors, lecturers, etc., a total of 25. The course covers two years of nine months each. The entrance requirements are two years of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours, and general bacteriology, 3 hours. Total fees are $73 for the first and $45 for the second year. The acting Dean is Dr. Guy L. Noyes. Total registration for 1917-18 was 78. The next session begins Sept. 17, 1918, and ends June 5, 1919.

### Kansas City

Kansas City College of Medicine and Surgery, Eclectic, Twenty-Third and Holmes Streets.—Organized in 1915 as an offshoot of the Eclectic Medical University, a Class C medical school, now extinct. Total registration for 1917-18 was 96; graduates, 23. Since this school is an offshoot of a Class C medical college and is *reported not recognized by the Missouri State Board of Health and by the licensing boards of thirty-one other states,* no higher rating can be granted to it, pending an inspection which it has refused.

Kansas City University of Physicians and Surgeons, 729 Troost Street.—Originally chartered in 1903 as the Central College of Osteopathy; charter amended in 1917, by which it obtained the right to grant degrees in medicine, and the name was changed to the Central College Medical Department. Present title in 1918. Very liberal advanced standing allowed for work done in osteopathic colleges. There were 45 medical students enrolled in 1917-18, of whom 12 graduated. Rated in Class C by the Council on Medical Education. *Reported not recognized by the licensing boards of Missouri and of twenty-seven other states.*

### St. Louis

Washington University Medical School, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1835 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. The faculty comprises 31 professors and 74 lecturers, instructors, etc., a total of 105. Two full years of college work are required for admission, including courses in English, physics, chemistry and biology and a reading knowledge of German. The course is four years of eight months each. The total fees for the four years are, respectively, $205, $200, $200 and $205. The Dean is Dr. Philip A. Shaffer. The total registration for 1917-18 was 136; graduates, 30. The next session begins Sept. 6, 1918, and ends June 12, 1919.

St. Louis University School of Medicine, 1402 South Grand Avenue.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 44 professors, 77 lecturers and assistants, a total of 121. One year of college subjects preliminary to the four years of medical subjects is given in the medical school. Two years of collegiate work are required for admission. The curriculum covers four years of thirty-two weeks each. Summer semester optional. The total fees are $175 each year. The Dean is Dr. Hanau W. Loeb. The total registration for 1917-18 was 276; graduates, 58. The next session begins Oct. 1, 1918, and ends June 1, 1919.

St. Louis College of Physicians and Surgeons, Jefferson and Gamble Streets.—Organized in 1869. Classes graduated in 1870 and each subsequent year until 1873, when it suspended. Reorganized in 1879. Classes graduated in 1880 and subsequent years until 1915 when it merged with the Medical Department of the National University of Arts and Sciences. Reestablished in 1916. Total fees each year are $140; graduation fee, $25. The dean is Dr. Waldo Briggs. Registration during 1917-18 was 72; graduates, 40. The next session begins Oct. 1, 1918, and Ends June 3, 1919. *This college is reported as not recognized by the licensing boards of Missouri and thirty-four other states.*

## NEBRASKA

Nebraska, population 1,277,750, has three medical colleges. The University of Nebraska College of Medicine and the John A. Creighton Medical College of Omaha, population 165,470, and the Lincoln Medical College at Lincoln, population 46,515.

### Lincoln

Lincoln Medical College, Eclectic, corner Thirteenth and P Streets, Lincoln.—Organized in 1890 as the Lincoln Medical College. The first

class graduated in 1891. Became Cotner University Medical College in 1911. Affiliation with Cotner University canceled and present title resumed in 1915. The Dean is Dr. F. L. Wilmeth. The total registration for 1917-18 was about 16; graduates, 3. *Official reports indicate that this college is not recognized by the licensing boards of Nebraska and thirty-one other states.*

### Omaha

JOHN A. CREIGHTON MEDICAL COLLEGE, Fourteenth and Davenport Streets.—It is the Medical Department of Creighton University. Organized in 1892. The first class graduated in 1893. It has a faculty of 19 professors and 41 associates, lecturers and assistants, a total of 60. Two years of collegiate work are required for admission. The course of study embraces four years of eight months each. Continuous session adopted for seniors only. The total fees each year for the four years are, respectively, $157, $147, $147 and $152. The Dean is Dr. Herman von W. Schulte. Total registration for 1917-18 was 90; graduates, 16. The thirty-seventh session begins Sept. 23, 1918, and ends May 31, 1919.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913, when all four years were transferred to Omaha. The faculty is composed of 22 professors and 42 lecturers and instructors, total 64. Two years of collegiate work are required for admission, including courses in physics, chemistry, zoology and a modern language. The fees for each of the four years, respectively, are $135, $130, $120 and $120. The Dean is Dr. Irving S. Cutter. Total registration for 1917-18 was 180; graduates, 27. The next session begins Sept. 20, 1918, and ends May 26, 1919.

## NEW HAMPSHIRE

New Hampshire, population 443,467, has one medical college, located at Hanover, population 2,075.

To be eligible for license to practice medicine in New Hampshire, all students matriculating in and after the session of 1915-16, in addition to a four-year high school education, must have completed at least two years of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical teaching was discontinued in 1914. The faculty is made up of 10 professors and 2 instructors, a total of 12. Two years of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the B.S. degree in Dartmouth College may substitute the work of the first two years in medicine for that of the junior and senior years in the academic department. Candidates for the A.B. degree may make a similar saving of one year. The fees for the two years in medicine are, respectively, $172 and $173. Dean, Dr. John M Gile; Secretary, Colin C. Stewart. The total registration for 1917-18 was 31. The next session opens Sept. 19, 1918, and ends June 8, 1919.

## NEW YORK

New York State, population 10,366,778, has nine medical colleges. Six of these, College of Physicians and Surgeons (Columbia University), Long Island College Hospital, New York Homeopathic Medical College and Hospital, Cornell University Medical College, the University and Bellevue Hospital Medical College and Fordham University School of Medicine, are located in New York City, population 5,602,841. Albany Medical College is located in Albany, a city of 110,199 people. The University of Buffalo Medical Department is situated in Buffalo, population 468,558. The College of Medicine, Syracuse University, is in Syracuse, a city of 155,624 inhabitants.

To be eligible to receive a license to practice in New York, students matriculating in 1918-19 and thereafter must have completed two years of college work before entering on the study of medicine. This applies to graduates of 1922 and thereafter.

### Albany

ALBANY MEDICAL COLLEGE, 58-64 Eagle Street.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed full control. The faculty is composed of 8 professors and 52 instructors, assistants, etc., a total of 60. One year of collegiate work, including college courses in physics, chemistry, biology, English, and French or German, is required for admission. Two years of college work are required for admission. The curriculum covers four years of eight months each. The fees for the four years, respectively, are $195, $180, $165 and $165. The Dean is Dr. Thomas Ordway. The total registration for 1917-18 was 81; graduates, 11. The eighty-eighth session begins Sept. 23, 1918, and ends June 9, 1919.

### Buffalo

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. The faculty is composed of 30 professors and 77 lecturers, assistants etc., a total of 107. Two years of collegiate work, including college courses in physics, chemistry, biology, English and French or German are required for admission. The course covers four years of eight months each. The total fees for each of the four years are $200, matriculation fee $5. The Dean is Dr. C. Sumner Jones. Total registration for 1917-18 was 215; graduates, 26. The seventy-third session begins Sept. 23, 1918, and ends June 6, 1919.

### New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. The faculty is composed of 89 professors and 172 instructors, demonstrators, etc., a total of 261. Two years of collegiate work, including courses in physics, chemistry, biology, English and either French or German are required for admission. The work covers four years of eight months each. Continuous sessions adopted for seniors only. The Dean is Dr. Samuel W. Lambert. The total fees for the four years, respectively, are $265, $251, $250 and $275. Total registration for 1917-18 was 589; graduates, 113. The one hundred and eleventh session begins Sept. 25, 1918, and ends June 5, 1919.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City, and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or New York. The faculty is composed of 51 professors and 77 assistants, lecturers, instructors, etc., a total of 128. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor degree on the completion of the year's work. The candidate must also have such knowledge of physics, inorganic chemistry and biology as may be obtained in college by a year's course in these subjects when accompanied by laboratory work. The fees for each of the four years are, respectively, $190, $185, $185 and $200. The Dean is Dr. William M. Polk. Total registration for 1917-18 was 187; graduates, 32. The twenty-first session begins Oct. 1, 1918, and ends June 13, 1919.

FORDHAM UNIVERSITY SCHOOL OF MEDICINE, Bathgate Avenue and Fordham Road.—Organized in 1905 as the School of Medicine of St. John's College. Present title assumed in 1907. First class graduated in 1909. The faculty consists of 60 professors and 70 lecturers and assistants, a total of 130. The course of instruction covers four years of eight and a half months each. Continuous session for seniors only. Total fees for the four years, respectively, are $256, $241, $235 and $235. Two years' work in a recognized college of liberal arts, including college courses in physics, chemistry and biology, are required for admission. The Dean is Dr. Joseph Byrne. The total registration for 1917-18 was 279; graduates, 63. The fourteenth session begins Sept. 27, 1918, and ends June 10, 1919.

LONG ISLAND COLLEGE HOSPITAL, Henry and Amity Streets, Brooklyn.—Organized in 1858. The first class graduated in 1860. It has a faculty of 20 professors and 108 assistants, instructors, etc., a total of 128. Two years of collegiate work, including college courses in physics, chemistry and biology, are required for admission. The course covers four years of eight months each. Fees: first year, $255; second year, $250; third, $250, and $275 for the fourth year. The secretary is Dr. Otto V. Huffman. Total registration for 1917-18 was 345; graduates, 46. The sixty-first session begins Sept. 23, 1918, and ends May 29, 1919.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, Eastern Boulevard, between Sixty-Third and Sixty-Fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title, New York Homeopathic Medical College, was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. Total registration for 1917-18 was 170; graduates, 26. The fifty-ninth session begins Sept. 25, 1918, and ends May 23, 1919.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, 338 East Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. The faculty is composed of 61 professors and 85 instructors, etc., in all 146. The course covers four years of eight months each. Entrance requirements are two years of collegiate work, in addition to a standard four-year high school course, including college courses in physics, chemistry and biology. The fees are $225 per year. The Dean is Dr. Samuel A. Brown. Total registration for 1917-18 was 491; graduates, 92. The next session begins Sept. 25, 1918, and ends June 11, 1919.

### Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307-311 Orange Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Two years of a recognized college

course are required for admission. The course covers four years of thirty-five weeks each. The fees are $210 annually; graduation fee, $10. The faculty is composed of 28 professors and 57 associate and assistant professors, lecturers and instructors. The Dean is Dr. John L. Heffron. The total enrolment for 1917-18 was 125; graduates, 24. The forty-eighth session begins Oct. 1, 1918, and ends June 11, 1919.

## NORTH CAROLINA

North Carolina, population 2,418,559, has three medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,149. The Leonard Medical School is at Raleigh, population 19,980. Wake Forest College School of Medicine is at Wake Forest, population 1,443.

To be eligible for a license to practice medicine in North Carolina, graduates of 1918 and 1922 must have completed, respectively, one year and two years of college work including courses in physics, chemistry and biology in addition to 14 units of high school work before beginning the study of medicine.

### Chapel Hill

University of North Carolina School of Medicine.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Two years of collegiate work are required for admission. The faculty is composed of 7 professors and 8 lecturers, assistants, etc., a total of 15. The fees for each year are $132. The Dean is Dr. I. H. Manning. The total registration for 1917-18 was 57. The thirty-third session begins Sept. 2, 1918, and ends May 30, 1919.

### Raleigh

Leonard Medical School.—Colored. This department of Shaw University was established in 1882. Classes were graduated in 1886, 1888 and in all subsequent years, including 1914, when clinical teaching was discontinued. Two years of collegiate work are required for admission. It has a faculty of 12. The course covers two years of eight months each. The total fees for each year are $115. The Dean is Dr. George H. Stoddard. Total registration for 1917-18 was 5. The thirty-seventh session begins Oct. 1, 1918, and ends May 29, 1919.

### Wake Forest

Wake Forest College School of Medicine.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 11. Only the first two years of the medical course are offered after the completion of freshman and sophomore college work, and on this combined course the B.S. degree is conferred. Each annual course extends over nine months. The fees for each year aggregate $115. The Secretary is E. B. Earnshaw. The total registration for 1917-18 was 35. The seventeenth session begins Sept. 3, 1918, and ends May 30, 1919.

## NORTH DAKOTA

North Dakota, population 752,260, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 15,332 people. It gives only the first two years of the medical course.

Candidates for license to practice medicine in North Dakota who graduated in 1912 and thereafter, in addition to a four-year high school education, must have completed two years of work in an approved college of liberal arts including courses in Latin, physics, chemistry, botany and zoology, prior to beginning the study of medicine. Beginning in 1918 every applicant for a license must show evidence of having spent at least one year as an intern in a hospital.

### University

University of North Dakota School of Medicine.—Organized in 1905. Offers only the first two years of the medical course. Two years' work in a college of liberal arts is required for admission. The fees are $50 each year. The faculty consists of 4 professors and 6 instructors, a total of 10. The Dean is Dr. Harley E. French. The total registration for 1917-18 was 30. The thirteenth session begins Sept. 22, 1918, and ends June 12, 1919.

## OHIO

Ohio, population 5,181,220, has five medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 410,476 inhabitants. Cleveland, population 674,073, contains one medical school, Western Reserve University School of Medicine. Columbus, population 214,878, contains the two departments of the Ohio State University, the College of Medicine and the College of Homeopathic Medicine.

### Cincinnati

University of Cincinnati College of Medicine, Eden Avenue, Cincinnati General Hospital.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Two years of college work are required for admission. The faculty consists of 43 professors, 113 associates, assistants, etc., a total of 156. The course covers four years of eight months each. The fees for each of the first three years are $150 and for the fourth year, $170. The Dean is Dr. Christian R. Holmes. The total registration for 1917-18 was 140; graduates, 23. The next session begins Oct. 1, 1918, and ends June 14, 1919.

Eclectic Medical College, 630 West Sixth Street.—Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843, inclusive. It has a faculty of 27 professors and 9 lecturers and assistants, a total of 36. Two years of college work are required for admission. The course covers four years of eight months each. The fees are $120 for each year; matriculation fee, $5. The Secretary is Dr. John K. Scudder. Total registration for 1917-18 was 88; graduates, 22. The next session begins Sept. 12, 1918, and ends May 12, 1919.

### Cleveland

Western Reserve University School of Medicine, 1353 East Ninth Street.—Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 it absorbed the Cleveland College of Physicians and Surgeons. The faculty includes 18 professors and 93 lecturers, assistants, etc., a total of 111. The curriculum embraces four years of eight and one-half months each. Three years of college work are required for admission. The total fees for each of the four years are, respectively, $175, $160, $154 and $155. The Dean is Dr. C. A. Hamann. The total registration for 1917-18 was 181; graduates, 46. The seventy-sixth session begins Sept. 26, 1918, and ends June 12, 1919, for the first three year classes; for seniors the session began July 1, 1918, and ends about March 1, 1919.

### Columbus

Ohio State University College of Medicine, 710 North Park Street.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. The faculty consists of 32 professors and 60 lecturers, demonstrators, etc., a total of 92. Two years of collegiate work are required for admission. The course covers four years of eight months each. Tuition fees are $152 each year. The Acting Dean is Francis L. Landacre. The total registration for 1917-18 was 124; graduates, 23. The next session begins Sept. 7, 1918, and ends June 17, 1919.

Ohio State University College of Homeopathic Medicine.—Organized in 1914, when the property of the Cleveland-Pulte Medical College of Cleveland was transferred to the Ohio State University. The faculty numbers 23. Two years of college work are required for admission. The students are taught largely in the same classes and by the same teachers as students of the College of Medicine during the first two years. Tuition fees are $152 each year. The Dean is Dr. Claude A. Burrett. The total registration for 1917-18 was 38; graduates, 14. The fourth session begins Sept. 7, 1918, and ends June 12, 1919.

## OKLAHOMA

Oklahoma, population 2,245,968, has one medical college, the School of Medicine of the University of Oklahoma. The work of the first and second years is given in the academic laboratories at Norman, a city of 3,724 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 92,943 and which is eighteen miles north of Norman.

To be eligible for license to practice medicine in Oklahoma, all students matriculating in 1914-15 and in 1917-18, in addition to a four-year high school education, must have completed, respectively, one year and two years of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine.

### Norman and Oklahoma City

University of Oklahoma School of Medicine.—Organized in 1900. Gave only the first two years of the medical course at Norman until 1910, when a clinical department was established at Oklahoma City. It has a faculty of 49 professors and 16 instructors, a total of 65. Two years of collegiate work are required for admission. The course is four years of nine months each. An optional course of six years is offered

for the degree of B.S. and M.D. The total fees for the four years are, respectively, $58, $40, $20 and $20. The Dean is Dr. Leroy Long, 325 East Fourth Street, Oklahoma City. The total registration for 1917-18 was 73; graduates, 13. The nineteenth session begins Sept. 17, 1918, and ends June 3, 1919.

## OREGON

Oregon, population 848,866, has one medical college, the University of Oregon Medical School, located in Portland, a city of 295,463 population.

### Portland

UNIVERSITY OF OREGON MEDICAL SCHOOL, Lovejoy and Twenty-Third Streets.—Organized in 1887. The first class graduated in 1888. A class graduated each subsequent year except 1898. Became an integral part of the University of Oregon in 1910. The Willamette University Medical Department was merged in 1913. It has a faculty of 17 professors and 65 lecturers, assistants, etc., a total of 82. Entrance requirements are two years of college work or its equivalent. The course is four years of eight months each. Fees: Matriculation, $5; tuition, $150 each year. The Dean is Dr. K. A. J. Mackenzie. The total registration for 1917-18 was 75; graduates, 21. The thirty-second session begins Oct. 1, 1918, and ends May 31, 1919.

## PENNSYLVANIA

Pennsylvania, population 8,591,029, has six medical colleges. Of these, Philadelphia, having a population of 1,709,518, contains five, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania and Temple University Department of Medicine. The other school, the School of Medicine of the University of Pittsburgh, is situated in Pittsburgh, a city of 579,090.

To be eligible for license to practice medicine in Pennsylvania, students matriculating in the session 1914-15 and thereafter, in addition to a four-year high school education, must have completed a year's work either in an approved college of liberal arts or in a preliminary year in the medical college, including college courses in physics, chemistry and biology, before beginning the study of medicine. He must also have completed an internship of at least one year in an approved hospital.

### Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-Sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772-79, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania, was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. The faculty consists of 55 professors, associate, adjunct and assistant professors, and 149 lecturers, associates, instructors, etc., a total of 204. The minimum requirements for admission are a standard four-year high school course or its equivalent, plus two years of work in an approved College of Arts and Science, including courses in French or German, and in physics, chemistry and general biology or zoology, with appropriate laboratory exercises. The course embraces four years of study of thirty-four weeks each. The total fees for each of the four years are, respectively, $233, $210, $210 and $214. The Dean is Dr. William Pepper. Total registration for 1917-18 was 479; graduates, 115. The one hundred and fifty-third session begins Sept. 27, 1918, and ends June 18, 1919.

JEFFERSON MEDICAL COLLEGE, Tenth and Walnut Streets.—Organized in 1825 with its present title as the Medical Department of Jefferson College, Cannonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its own board of trustees. It has a faculty of 27 professors, associate and assistant professors, and 146 associates, lecturers, demonstrators and instructors, a total of 173. Entrance requirements are a completed standard four-year high school or college preparatory course, or the equivalent, and in addition two years of work in an approved college of arts and science amounting to at least 60 semester hours, including specified courses in physics, chemistry and biology, with laboratory work amounting to 8 semester hours each. The course of study covers graded work of four years of eight and a half months each. The tuition is $210 a year with a matriculation fee of $5 paid on admission. The Dean is Dr. Ross V. Patterson. The total registration for 1917-18 was 466; graduates, 102. The ninety-fourth session begins Sept. 23, 1918, and ends June 7, 1919.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Twenty-First and N. College Avenue.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 17 professors and 41 assistants, lecturers, etc., in all 68. Entrance requirements are a completed course in a standard secondary school, and in addition two years of collegiate work, including courses in physics, chemistry, biology and two foreign languages, one of which must be French, German or Spanish, physics, chemistry and biology. It has a each. Fees for each of the four years are, respectively, $197, $176, $183 and $179.50. The Dean is Dr. Martha Tracy. The total registration for 1917-18 was 43; graduates, 8. The seventy-ninth session begins Sept. 18, 1918, and ends June 4, 1919.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 226 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition two years devoted to college course, including English and either French, German or Spanish, physics, chemistry and biology. It has a faculty of 24 professors and 60 lecturers, instructors, etc., in all 84. The work covers four years of eight and a half months each. Total fees for each of the first years are $180 and for the fourth year $195. The Dean is Dr. William A. Pearson. The total registration for the college year 1917-18 was 140; graduates, 12. The seventy-first session begins Sept. 30, 1918, and ends May 30, 1919.

THE TEMPLE UNIVERSITY DEPARTMENT OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. The faculty numbers 93. Two years of college work are required for admission. The fees for each of the four years, respectively, are $175, $170, $160 and $161. The Dean is Dr. Frank C. Hammond. The total registration for 1917-18 was 106; graduates, 22. The eighteenth session begins Sept. 26, 1918, and ends June 1, 1919.

### Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Bigelow Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. The faculty is composed of 17 professors and 113 associates, assistants, etc., 130 in all. Entrance requirements are two years of recognized college work, to have included essentially courses in English, chemistry (inorganic and organic), physics, biology and a reading knowledge of French or German, Italian or Spanish. It is possible for students to get the degree of B.S. and M.D. in six years. The course of study for medicine alone is four years of eight and a half months each. The tuition fee is $250 a year; matriculation fee, $15; diploma fee, $5. The Dean is Dr. Ogden M. Edwards, Jr. The total registration for 1917-18 was 147; graduates, 27. The thirty-third session begins Sept. 23, 1918, and ends June 6, 1919.

## SOUTH CAROLINA

South Carolina, population 1,634,340, has one medical college, situated in Charleston, a city of 60,734 people.

Graduates of 1922 (matriculants of 1918-19) and thereafter, to be eligible for license to practice medicine in South Carolina must have completed, in addition to 14 units of high school work, two years in an approved college, including courses in English, physics, chemistry and biology.

### Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, 16 Lucas Street.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. It has a faculty of 34 professors and 27 lecturers, instructors, etc., a total of 61. The course covers four years of eight months each. Two years of collegiate work including courses in physics, chemistry, biology and a modern foreign language are required for admission, in addition to a standard high school preparation. The total fees are $150 for each of the first three years and $145 for the last year. The Dean is Dr. Robert Wilson, Jr. Total enrolment for 1917-18 was 55; graduates, 9. The ninetieth session begins Sept. 27, 1918, and ends June 5, 1919.

## SOUTH DAKOTA

South Dakota, population 707,740, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a town of 2,376 people.

To be eligible for license to practice medicine in South Dakota, graduates of 1915 and thereafter must show that they matriculated in and graduated from medical colleges which required at least two years of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. This affects all students who matriculated in the session of 1911-1912 and thereafter.

### Vermilion

UNIVERSITY OF SOUTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1907. Offers only the first two years of the medical course. Two years' work in a college of liberal arts are required for admission. The fees are $60 each year. The faculty numbers 10. The Dean is Christian P. Lommen, B.S. The total registration for 1917-18 was 19. The twelfth session begins Sept. 17, 1918, and ends June 11, 1919.

## TENNESSEE

Tennessee, population 2,296,316, has four medical colleges. Of these, Vanderbilt University Medical Department and

Meharry Medical College are situated in Nashville, a city with a population of 117,057. The College of Medicine of the University of Tennessee and the University of West Tennessee College of Medicine and Surgery are located in Memphis, population 148,995.

To be eligible for a license to practice medicine in Tennessee students matriculating in the session of 1914-1915 and of 1918-1919 must have completed, respectively, one year of collegiate work, including courses in physics, chemistry, biology and a modern language, in addition to a four-year high school course before entering on the study of medicine.

### Memphis

University of Tennessee College of Medicine, three buildings, 879 Madison Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. The faculty includes 31 professors and 80 assistants, instructors, etc., a total of 111. Entrance requirements are a completed secondary education plus two years of collegiate work. Students taking the two-year premedical course in Knoxville may secure the B.S. and M.D. degrees. The total fees for the four years, respectively, are $107, $102, $102 and $127 for bona fide residents of the state, and $50 more each year for nonresidents. The Dean is Dr. A. H. Wittenborg. Total registration for 1917-18 was 84; graduates, 18. The next session begins Sept. 1, 1918, and ends June 4, 1919.

University of West Tennessee College of Medicine and Surgery, Colored. 1190 South Phillips Place.—Organized in 1900. The first class graduated in 1904, and a class graduated each subsequent year. It has a faculty of 22. The course covers four years. Two years of college work are required for admission. The fees are $65 per year; graduation, $10 extra. The Dean is Dr. M. V. Lynk. Registration for 1917-18 was 21; graduates, 8. The nineteenth session begins Sept. 23, 1918, and ends about May 20, 1919. *Official reports indicate that the diplomas of this college are not recognized as an acceptable qualification for the license by the licensing boards of thirty-seven states.*

### Nashville

Vanderbilt University School of Medicine.—This school was founded in 1874. The first class graduated in 1875. The faculty consists of 25 professors and 54 lecturers, a total of 79. One year of collegiate work is required for admission. The course covers four years of nearly eight and a half months each. The total fees for the four years respectively are $156, $150, $150 and $175. The acting Dean is Dr. B. F. Hambleton. The total registration for 1917-18 was 115; graduates, 23. The forty-fifth session begins Sept. 30, 1918, and ends June 11, 1919.

Meharry Medical College. Colored. 1118 First Avenue, South.—This school was organized in 1876 as the Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1916. The faculty is made up of 13 professors and 13 instructors, demonstrators, etc., 26 in all. The work embraces four years of thirty weeks each. The total fees for each of the first three years are $70 and for the fourth year, $80. The President is Dr. G. W. Hubbard. Total registration for 1917-18 was 206; graduates, 77. The forty-third session begins Oct. 8, 1918, and ends May 22, 1919.

## TEXAS

Texas, population 4,472,494, has two medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 41,863 inhabitants. The Baylor University College of Medicine is located in Dallas, population 124,527.

To be eligible for a license to practice medicine in Texas, students matriculating in the session of 1914-1915 and thereafter must have completed a year of collegiate work, including courses in physics, chemistry, biology and modern language, in addition to a standard four-year high school course, before entering on the study of medicine.

### Dallas

Baylor University College of Medicine, 720 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University at Waco. It acquired the charter of Dallas Medical College in 1904. The first class graduated in 1901. The faculty numbers 58. Entrance requirement is one year of college work in addition to a four-year high school education. For the session of 1918-19 and thereafter two years of collegiate work will be required for admission. The course is four years of eight months each. The fees are $155 each year; matriculation fee of $5, paid but once; graduation fee, $25. The Dean is Dr. E. H. Cary. Total registration for 1917-18 was 68; graduates, 13. The nineteenth session begins Sept. 30, 1918, and ends May 29, 1919.

### Galveston

University of Texas Department of Medicine, Avenue B, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. It has a faculty of 18 professors and 22 lecturers, a total of 42. The curriculum embraces four years of eight months each. The entrance requirement is two years of collegiate work in addition to a four-year high school education. The total fees for the four years, respectively, are $78, $48, $30.50 and $18. The Dean is Dr. William S. Carter. Total registration for 1917-18 was 209; graduates, 40. The twenty-eighth session begins Oct. 1, 1918, and ends May 31, 1919.

## UTAH

Utah, population 438,974, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 117,399 people.

To be eligible to secure licenses to practice medicine in Utah, students matriculating in and after the session of 1912-1913, in addition to a four-year high school education, must have completed at least one year of collegiate work prior to beginning the study of medicine, this preliminary college work to have included college courses in physics, chemistry and biology.

### Salt Lake City

University of Utah School of Medicine.—Organized in 1906. Gives only first two years of medical course. Each course covers thirty-six weeks. Two years of collegiate work are required for admission. The medical faculty consists of 10 professors and 13 lecturers and assistants, a total of 23. The fees are $95 each year for residents, and $120 each year for nonresidents. The Dean is Dr. Perry G. Snow. Total registration for 1917-18 was 34. The twelfth session begins Sept. 30, 1918, and ends June 7, 1919.

## VERMONT

Vermont, population 364,322, has one medical school, located at Burlington, a town of 21,432 people.

Students matriculating in and after the sessions 1912-1913 and of 1918-1919 who desire to practice medicine in Vermont must have obtained a preliminary training, respectively, of one year and of two years of collegiate work, in addition to a standard four-year high school education, this additional years's work to include college courses in physics, chemistry and biology.

### Burlington

University of Vermont College of Medicine, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. The faculty numbers 38. Two years of college work in addition to a four-year high school education are required for admission. The course of study covers four years of nine months each. Continuous session for seniors only. The total fees for each of the first three years are $145, and $170 for the fourth year. The Dean is Dr. H. C. Tinkham. The total registration for 1917-18 was 95; graduates, 22. The next session begins Oct. 9, 1918, and ends June 4, 1919.

## VIRGINIA

Virginia, population 2,202,522, has two medical colleges, one, the Department of Medicine of the University of Virginia, situated in Charlottesville, population 12,500, and the Medical College of Virginia at Richmond, population 156,687.

Only graduates of medical colleges registered by the Virginia State Board of Medical Examiners are eligible to obtain licenses to practice medicine in this state. Medical colleges to be so registered must require of all students admitted in the session of 1914-1915, completion of at least one year, and in the session of 1917-1918 and thereafter two years of collegiate work, including courses in physics, chemistry, biology and a modern language, preferably German, in addition to a four-year high school education.

### Charlottesville

University of Virginia Department of Medicine.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. It has a faculty of 16 professors and 19 lecturers, instructors, assistants, etc., a total of 35. The requirements for admission are the completion of a four-year high school course, or its equivalent, and two years of college work devoted to English, mathematics, chemistry, physics and biology, and French or German. Continuous session adopted for seniors only. Total fees for each year are $150; matriculation fee, $10. The Dean is Dr. Theodore Hough. The total registration for 1917-18 was 100; graduates, 22. The ninetieth session begins Sept. 12, 1918, and ends June 11, 1919.

### Richmond

MEDICAL COLLEGE OF VIRGINIA, Marshall and College Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 42 professors and 90 lecturers, instructors, etc., a total of 132. The requirement for admission is a four-year high school education and in addition two years of collegiate work, including courses in physics, chemistry, biology and French or German. The course embraces four years of eight months each. Fees, $169 for each of the first three years and $201 for the fourth. The Dean is Dr. Stuart McGuire. The total registration for 1917-18 was 137; graduates, 43, including 2 students of the North Carolina Medical College, who were granted degrees by the latter. The ninetieth session begins Sept. 18, 1918, and ends June 5, 1919.

## WEST VIRGINIA

West Virginia, population 1,399,320, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 12,974 population.

Graduates of 1921 (matriculants of 1917-1918) and thereafter, in order to secure licenses to practice medicine in West Virginia, must have completed, in addition to a high school education, one year of collegiate work, including courses in physics, chemistry and biology, before entering on the study of medicine.

### Morgantown

WEST VIRGINIA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1902, and gives only the first two years of the medical course. Two years of college work are required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 12. Fees: For residents of the state, tuition $25 each year, matriculation, $5; for nonresidents, tuition, $40; matriculation fee, $10. The Dean is Dr. John N. Simpson. The total registration for 1917-18 was 36. The next session begins Sept. 23, 1918, and ends June 11, 1919.

## WISCONSIN

Wisconsin, population 2,513,758, has two medical colleges, the Medical School of the University of Wisconsin, which teaches the first two years of the medical course, and is located at Madison, a city of 30,699 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 436,535 people.

To be eligible for licenses to practice medicine in Wisconsin, students matriculating in the session of 1915-1916 (graduates of 1919) and thereafter, prior to entering a medical school, must have completed, besides a four-year high school course, two years of collegiate work, including courses in physics, chemistry, biology and a modern language.

### Madison

UNIVERSITY OF WISCONSIN MEDICAL SCHOOL.—Organized in 1907. Gives only the first two years of the medical course. For matriculation at least two years in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 15 professors and 13 lecturers, instructors, etc., a total of 30. Tuition fees: For residents of the state, $70 each year; for nonresidents, $195. The Dean is Dr. Charles R. Bardeen. The registration for 1917-18 was 120. The eleventh session begins Oct. 1, 1918, and ends June 25, 1919.

### Milwaukee

MARQUETTE UNIVERSITY SCHOOL OF MEDICINE, Fourth Street and Reservoir Avenue.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. It has a faculty of 51 professors and 50 assistants, instructors, etc., a total of 101. The entrance requirements include, in addition to a four-year high school education, two years of college work, including courses in physics, chemistry, biology and a modern language. The curriculum is for four years of thirty-four weeks each. The total fees for the four years, respectively, are $195, $195, $195 and $225. The Dean is Dr. Louis F. Jermain. The registration for 1917-18 was 67; graduates, 7. The seventh session begins Sept. 17, 1918, and ends June 17, 1919.

## PHILIPPINE ISLANDS

The Philippine Archipelago, having a population (estimated 1917) of 8,879,999, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the Medical Faculty of the University of St. Thomas. They are located in the city of Manila, which in 1910 had a population of 234,409.

### Manila

UNIVERSITY OF THE PHILIPPINES COLLEGE OF MEDICINE AND SURGERY, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. Present title in 1910. The faculty includes 33 professors and 44 lecturers, assistants, etc., a total of 77. Two years of collegiate work leading to the degree of Bachelor of Arts are required for admission. The course extends over five years of nine months each with an additional sixth year of intern service. The Dean is Dr. Fernando Calderon. The total registration for 1917-18 was 205; graduates, 23. The twelfth session began July 1, 1918, and ends April 4, 1919.

## CANADA

The Dominion of Canada has nine medical colleges, all but one of which require a five-year course, including in the first year courses in physics, chemistry and biology. This course is practically equal to that in the colleges of the United States which require one year of college work for admission, including the science courses named. None of the Canadian colleges has a minimum requirement of two years of collegiate work, or its equivalent, preliminary to or as a part of the medical course. The medical school at Edmonton, Alberta, gives only the first two years of the medical course, or three years, including the preliminary science year.

### Alberta

UNIVERSITY OF ALBERTA, FACULTY OF MEDICINE, Strathcona.—Organized in 1913. Offers only the first three years of the five-year medical course, including the preliminary science year. The faculty numbers 19. Fees for the first year are $63; for the second and third years, each $88. The registrar is Cecil E. Race, B.A. The registration for 1917-18 was 48. The sixth session begins Oct. 1, 1918, and ends May 15, 1919.

### Manitoba

MANITOBA MEDICAL COLLEGE, Winnipeg.—It is the Medical Faculty of the University of Manitoba. Organized in 1883, first class graduated in 1886 and a class graduated each subsequent year. The faculty numbers 59. The fees are $175 for the first year and $160 for each subsequent year. The entire course covers five years, the first year including premedical courses in physics, chemistry and biology. The Dean is Dr. S. Willis Prowse. Total registration for 1917-18 was 128, graduates, 32. The next session begins Oct. 1, 1918, and ends May 9, 1919.

### Nova Scotia

DALHOUSIE UNIVERSITY, FACULTY OF MEDICINE, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College in 1855. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the university and the board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. It has a faculty of 36 professors, lecturers and demonstrators. Requires matriculation examination and a graded course of five years, including premedical courses in physics, chemistry and biology. The fees are $110 for each of the first two years and $120 for each of the other three. Total registration for 1917-18 was 77; graduates 7. The Secretary is Prof. D. Fraser Harris. The next session begins Oct. 1, 1918, and ends May 29, 1919.

### Ontario

UNIVERSITY OF TORONTO, FACULTY OF MEDICINE, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. The course of study covers five years of eight months each, the first year including premedical courses in physics, chemistry and biology. It has a faculty of 51 professors and 154 lecturers, associates, etc., a total of 205. The fees are $150 each year; graduation fee, $20. The Secretary is Dr. A. Primrose. The total registration for 1917-18 was 522; graduates, 74. The next session begins Sept. 24, 1918, and ends June 1, 1919.

QUEEN'S UNIVERSITY FACULTY OF MEDICINE, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the university, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became an integral part of Queen's University. The faculty includes 17 professors and 32 assistants, instructors, etc., a total of 49. The fees amount to $115 each year; fee for M.D., C.M. degrees, $30. The course covers five years of thirty teaching weeks each, the first year including courses in physics, chemistry and biology. The total registration in 1917-18 was 180; graduates, 22. The Dean is Dr. J. C. Connell. The next session begins Sept. 30, 1918, and ends June 6, 1919.

WESTERN UNIVERSITY, FACULTY OF MEDICINE, London.—Organized in 1881, first class graduated in 1883, and a class graduated each year subsequently. The Faculty of Medicine became an integral part of Western University in 1913. The faculty numbers 54. The course is five years of eight months each, the first year including premedical courses in physics, chemistry and biology. The total fees each year are $115; matriculation fee, $5; graduation fee, $25. The Dean is Dr. H. A. McCallum. Total registration for 1917-18 was 68; graduates, 11. The next session begins Oct. 1, 1918, and ends May 30, 1919.

### Montreal

MCGILL UNIVERSITY, FACULTY OF MEDICINE.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-39 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. The course extends over five years of eight months each, including the preliminary year devoted largely to physics, chemistry and biology. The faculty numbers 174. The total fees for the five years, respectively, are $174, $174, $174, $174 and $204. The total registration for 1917-18 was 365; graduates, 62. The Registrar is Dr. John W. Scane. The next session begins Oct. 1, 1918, and ends May 30, 1919.

MONTREAL SCHOOL OF MEDICINE AND SURGERY, Montreal.—Organized in 1843, incorporated in 1845. In 1891, by act of parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed.

Present name assumed in 1911. A class was graduated in 1843 and in each subsequent year. The faculty numbers 80. The course extends over five years, including premedical courses in physics, chemistry and biology. The total fees for the five years, respectively, are $110, $118, $126, $126 and $138. The Dean is Dr. E. P. Lachapelle. The total registration for 1917-18 was 231; graduates 43. The next session begins Oct. 3, 1918, and ends June 30, 1919.

### Quebec

Laval University Faculty of Medicine, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 35. The fees are $90 each year. The course extends over five years, the first year including courses in physics, chemistry and biology. The Dean is Dr. Edwin Turcot, Quebec. Total registration for 1917-18 was 103; graduates, 19. The next session begins June 4, 1918, and ends December, 1918.

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## THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are 14 units of high school work and two years (60 semester hours) of college work.

### THE HIGH SCHOOL REQUIREMENT

(A) Required, 7 units.

| | Units |
|---|---|
| Mathematics (minimum 2 years, maximum 3 years), algebra and plane geometry | 2 |
| English (minimum 2 years, maximum 4 years) | 2 |
| One foreign language (minimum 2 years, maximum 4 years) | 2 |
| History and civics | 1 |
| Total number of required units | 7 |

(B) Elective, 7 units.

To be selected from the following:

| | Units |
|---|---|
| English language and literature (in addition to the required work) | 1 to 2 |
| Foreign languages, additional, Latin, German, Italian, French, Spanish or Greek (not less than 1 year in any one) | 1 to 4 |
| Advanced mathematics, advanced algebra, solid geometry and trigometry (½ year each) | 1 |
| Natural science, chemistry 1 year, physics 1 year, and biology, botany, physiology and zoology (½ to 1 year each) | ½ to 2 |
| Earth science, physical geography, geology and agriculture (½ year to 1 year each) | ½ to 1 |
| Astronomy (½ year) | ½ |
| Drawing (½ to 1 year) | ½ to 1 |
| History, ancient, medieval and modern, and English (1 year each) | 1 to 3 |
| Economics (½ year) | ½ |
| Manual training (1 year) | 1 |
| Bookkeeping (½ to 1 year) | ½ to 1 |

One unit in any subject is the equivalent of work in that subject for four or five periods per week for a year of at least thirty-six weeks, periods to be not less than forty-five minutes in length. One unit is equivalent to 2 semester credits or 2 points.

#### PREMEDICAL COLLEGE COURSE

(See paragraph "II. Premedical College Course" in the standards of the Council on Medical Education on page 548.)

#### Medical Curriculum

Division 1.—Anatomy, 720 Hours (18 per Cent.)

| | Hours. | Lect. Rec. Dem. | Lab. Wk. |
|---|---|---|---|
| (a) Gross anatomy (including applied anatomy) | 510 | 120 | 390 |
| (b) Histologic and microscopic anatomy | 135 | 30 | 105 |
| (c) Embryology | 75 | 30 | 45 |

Division 2.—Physiology and Chemistry, 600 Hours (15 per Cent.)

| | Hours. | Lect. Rec. Dem. | Lab. Wk. |
|---|---|---|---|
| (a) Inorganic chemistry | 180 | 60 | 120 |
| (b) Organic chemistry | 75 | 30 | 45 |
| (c) Physiologic chemistry | 104 | 30 | 75 |
| (d) Physiology | 240 | 140 | 100 |

Division 3.—Pathology, Bacteriology and Hygiene, 450 Hours (11.25 per Cent.)

| | Hours. | Lect. Rec. Dem. | Lab. Wk. |
|---|---|---|---|
| (a) Bacteriology | 135 | 30 | 105 |
| (b) Hygiene and general dietetics | 45 | 45 | ... |
| (c) Pathology | 270 | 60 | 210 |

Division 4.—Pharmacology, Materia Medica and Therapeutics, 240 Hours (6 per Cent.)

| | Hours. | Lect. Rec. Dem. | Lab. Wk. |
|---|---|---|---|
| (a) Pharmacology | 105 | 40 | 65 |
| (b) Materia medica and pharmacology | 80 | ... | ... |
| (c) Therapeutics | 55 | ... | ... |

Division 5.—Medicine and Medical Specialties, 970 Hours (24.25 per Cent.)

| | Hours. | Lect. Rec. Dem. | Lab. Wk. |
|---|---|---|---|
| (a) General medicine (including clinical microscopy) | 640 | ... | ... |
| (b) Pediatrics | 150 | ... | ... |
| (c) Nervous and mental diseases | 105 | ... | ... |
| (d) Jurisprudence, ethics and economics | 30 | ... | ... |
| (e) Dermatology and syphilis | 45 | ... | ... |

Division 6.—Surgery and Surgical Specialties, 720 Hours (18 per Cent.)

| | Hours. | Lect. Rec. Dem. | Lab. Wk. |
|---|---|---|---|
| (a) General surgery | 510 | ... | ... |
| (b) Orthopedic surgery | 45 | ... | ... |
| (c) Genito-urinary diseases | 45 | ... | ... |
| (d) Eye | 60 | ... | ... |
| (e) Ear, nose and throat | 60 | ... | ... |

Division 7.—Obstetrics and Gynecology, 300 Hours (7.5 per Cent.)

| | Hours. | Lect. Rec. Dem. | Lab. Wk. |
|---|---|---|---|
| (a) Obstetrics | 195 | ... | ... |
| (b) Gynecology (including some abdominal surgery) | 105 | ... | ... |

Colleges may reduce the number of hours in any subject not more than 20 per cent. provided that the total number of hours in a division is not reduced. Where the teaching conditions in a college are best subserved, the subject may be, for teaching purposes, transferred from one division to another. When didactic and laboratory hours are specified in any subject, laboratory hours may be substituted for didactic hours.

(Note.—At the 1916 meeting the Committee on Education and Pedagogics was instructed to revise this curriculum to meet the present requirements.)

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Leland Stanford Junior University School of Medicine.
University of California Medical School.
College of Physicians and Surgeons (University of Southern California Medical Department).
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Howard University School of Medicine.
Emory University School of Medicine.
University of Georgia Medical Department.
Northwestern University Medical School.
Rush Medical College.
University of Illinois College of Medicine.
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State University of Iowa College of Medicine.
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**The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 3431 Lexington Street, Chicago.**

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, AUGUST 17, 1918

## MEDICAL EDUCATION IN THE UNITED STATES

We are publishing this week, for the eighteenth consecutive year, statistics regarding medical education in the United States. The great improvements that have been made during these eighteen years have been set forth in previous reports and are generally known to most of our readers. A study of the statistics will be well worth while, however, and, for those who may not have seen the previous reports, a few statements will be of interest.

Following the Civil War, the number of medical schools rapidly increased until in 1900 there were 160 medical schools in the United States—more than in all the rest of the world. Most of the schools were dependent on the students' fees for maintenance, and some were making profits from that source. Medical teaching was largely overshadowed by the energy expended to secure large enrolments. It was a common practice to issue pretentious announcements and extravagantly worded circulars, and even to send out solicitors who were paid commissions for such students as should be enrolled. Number, not quality, was sought; few students were so grossly ignorant that they could not gain admission. In fact, statistics show that in 1904 only four medical colleges were requiring any college work for admission, and only from 20 to 25 per cent. were actually requiring a four-year high school education. Under the methods pursued, it is not surprising that in 1904 the number of medical students reached the amazing total of 28,142, and that in that year there were graduated 5,747 physicians; nor is it a wonder that at the present time the Surgeon-General has to reject so many applicants for the Medical Reserve Corps because of their lack of professional training.

The campaign of publicity started by THE JOURNAL in 1900 led, in 1904, to the creation of the Council on Medical Education, which was placed in charge of the campaign for improvement. Minimal and ideal standards of education were drawn up; the merger of from two to five medical schools into one in each of various cities and states was advocated; annual conferences for the discussion of educational problems were held; the need of additional endowments for medical education was shown, and, finally, all medical schools were inspected and classified. A wide publicity in the columns of THE JOURNAL and in reports and pamphlets was given to the conditions found and to the Council's classifications, and improvements since then have been rapid. At present, largely through mergers, the number of colleges has been reduced to ninety; the number of students has been reduced to 13,630, and the number of graduates to 2,670.[1] These lower figures represent the normal decrease that was expected under the increased entrance requirements, and are not due to the war. As noted in Table 3 on page 542, the enrolments in the first three classes show an increase over previous years. Next year, therefore, unless the war makes an unexpected demand on the medical student body, the total enrolment in all medical schools and the total number of graduates should show an increase over the present year.

| Entrance Requirements | Colleges | | | | Students | | | | Graduates | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1904 | | 1918 | | 1904 | | 1918 | | 1904 | | 1918 | |
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| Four-yr. high school ed. or less* | 158 | 97.5 | 7 | 7.8 | 26,291 | 93.8 | 631 | 4.6 | 5,378 | 93.6 | 258 | 9.7 |
| One year of college work | ..... | .... | 34 | 37.8 | ..... | .... | 5,944 | 43.6 | ..... | .... | 1,147 | 43.0 |
| Two years of college work | 4 | 2.5 | 49 | 54.4 | 1,761 | 6.2 | 7,055 | 51.8 | 369 | 6.4 | 1,265 | 47.3 |
| Totals | 162 | .... | 90 | .... | 28,142 | .... | 13,630 | .... | 5,747 | .... | 2,670[1] | .... |

* It is not probable that in 1904 more than about thirty colleges (20 per cent.) were actually requiring a four-year high school education as a minimum for admission.

While in the totals of all colleges, students and graduates there has been a decrease, on the other hand, as shown in the accompanying tabulation, there has been a decided increase in the number of colleges that have enforced higher entrance requirements and in the numbers of students and graduates who possessed the higher entrance qualifications.

Instead of four (2.5 per cent.) medical schools which in 1904 required any college work for admission, now eighty-three (92.2 per cent.) are requiring one or two years of such work; instead of only 1,761 (6.2 per cent.) students enrolled in the higher standard colleges in 1904, during the year 12,999 (95.3 per cent.) students were enrolled in

1. Altogether 2,807 students successfully completed the courses of the senior year. From 137, however, in the Universities of California and Minnesota and in Rush Medical College, the degrees have been withheld pending the completion of a hospital internship.

the higher standard colleges, and instead of only 369 (6.4 per cent.) graduates who were turned out by the higher standard colleges in 1904, at the end of the last session 2,412 (90.3 per cent.) graduated from those institutions. In addition to the improvement in preliminary qualifications, which represents only one of the improvements brought about in medical education, it should also be stated that greatly increased endowments have been secured, many schools having received hundreds of thousands of dollars, while a score or more have received gifts of millions; most of the medical schools have erected new buildings, have established better equipped laboratories, have obtained more abundant clinical facilities, and, still more important, have employed larger numbers of skilled full-time teachers and developed better methods of teaching in both the laboratory and the clinical portions of the school. Instead of the large proportion of lectures or lecture clinics that constituted so great a part of the former curriculum, now the student gets most of his clinical training at the bedside of the patient, in small group clinics or in having patients individually assigned to him.

Since the proportion of physicians to population in the United States is still one to every 739 people, as compared with one to every 1,500 to 2,500 in the European countries, it is evident that the reduction in the output of physicians each year has not been serious. On the contrary, there has been a large increase in the number of those who are much better qualified, both by preliminary education and medical training, to care adequately for the sick, and to take a more active part in the prevention of disease and the promotion of public health.

## NEW OBSERVATIONS ON VITAMINS

As a corollary to the investigation of deficiencies in the diet and their relation to the so-called deficiency diseases, students of nutrition are beginning to summarize those positive properties of foods which give them special value as stimulants of growth, as antineuritic or antiscorbutic substances or as promoters of well-being from the metabolic standpoint. These properties or advantageous physiologic attributes include the character of the protein, that is, its capacity for yielding all of the amino-acids requisite for the body's needs, the digestibility of the nutrients, the amount and more particularly the suitability of the inorganic components, and, most recently, the content of vitamins of different types.

Not long ago, Osborne and Mendel,[1] who have been engaged under the auspices of the Carnegie Institution of Washington in extensive studies of the nutritive factors in animal tissues, demonstrated that ordinary butcher's meat, beef skeletal muscle, furnishes protein entirely adequate for the needs of growing animals. This tissue, however, was found to contain a far smaller proportion of the water-soluble vitamin than occurs in the liver tissue of the pig, or such now familiar tested sources of this essential dietary constituent as yeast, corn germ, wheat embryo, or milk. In view of this it was surprising to find, in Osborne and Mendel's[2] latest researches, that heart muscle, in contrast with the skeletal variety just mentioned, furnishes considerable of the water-soluble vitamin so essential to nutritive welfare. Glandular tissues, such as the pancreas, kidney and liver, had been shown to be relatively rich in this vitamin. We are now assured that it is likewise present in the brain tissue.[2] Furthermore, all of these gland foods contain proteins suitable for the nutrition of growing animals. In this sense their protein quality is "complete" from the amino-acid standpoint.

It is not without related interest that such derivatives of the meat industry have some virtues at least that are not associated with the muscular tissue. Perhaps this will serve to give them a more dignified place in dietetics, in which they have at times received some unfavorable reputation as sources of purins and therefore as precursors of uric acid. The latter no longer holds the spell over medicine that it once had.

Osborne and Mendel[2] have pointed out that their various observations of the unlike value of different animal tissues as sources of the water-soluble vitamin closely parallel the findings of Cooper[3] with respect to the effectiveness of different tissues in postponing the development of polyneuritis in pigeons fed on a diet of polished rice. He found that the liver, cardiac muscle, and cerebrum of the ox were much more efficient in preventing the onset of this disease than was the ox voluntary muscle.

In 1914, Osborne and Mendel[4] showed that cod liver oil contains the fat-soluble vitamin comparable with that in milk fat or butter and egg yolk fat, and now associated with the promotion of growth. They have now reported it to be present in the liver oil of mammals, from which it was removed in the case of the pig by extraction with ether. This likewise adds a new property to the liver as a source of vitamins.

The apparent need of certain bacteria for substances of the vitamin type has been referred to in THE JOURNAL. Pacini and Russell[5] seem to have demonstrated that the typhoid bacillus, in growing, produces a vitamin that can be isolated and identified by proper biologic methods. It is not radically surprising that this should be so, when the richness of another microbiotic form—the yeast—in vitamin is recalled. One naturally inquires how this may effect the general metabolism and nutritive condition of typhoid patients.

1. Osborne, T. B., and Mendel, L. B.: Nutritive Factors in Animal Tissues, I, Jour. Biol. Chem., 1917, **32**, 309.

2. Osborne, T. B., and Mendel, L. B.: Nutritive Factors in Animal Tissues, II, Jour. Biol. Chem., 1918, **34**, 17.

3. Cooper, E. A.: Jour. Hyg., 1912, **12**, 436; 1914, **14**, 12.

4. Osborne, T. B., and Mendel, L. B.: Jour. Biol. Chem., 1914, **17**, 401.

5. Pacini, A. J. P., and Russell, Dorothy W.: The Presence of a Growth-Producing Substance in Cultures of Typhoid Bacilli, Jour. Biol. Chem., 1918, **34**, 43.

## THE SELECTIVE SERVICE APPLIED TO PHYSICIANS

The proposed Selective Service Law, if the age limit is raised to 45, will affect 75,000 physicians. The bill as introduced by Senator Chamberlain and Mr. Dent, August 5, makes no mention of physicians as a class; there is nothing to indicate that a physician will be treated differently from any other man. Such speculation as has been made on the subject, and it would fill reams of paper, has concerned itself chiefly with the views advanced by Secretary Baker, Provost Marshal-General Crowder and Chief of Staff Peyton March. As stated by Secretary Baker, it is desired to prevent "the disruption of the industry of the country and the impairment of the efficiency of the various governmental agencies which would feel the indiscriminate enlistment of men up to the age of 45."

It has been suggested that the new law will provide for the utilization of the man power of the nation to the best advantage, although there is nothing in the bill, as we read it, that provides for any different method of applying the selective service principles than that which has heretofore governed the disposition of those under 31 years of age. In any event, as the matter affects physicians, certain points are clear: It is quite probable that physicians on local and district boards will be exempted during the continuance of such service; in fact, the Provost Marshal-General has so intimated. It is also obvious that physicians under 45 years of age, physically fit, without dependents, will be subject to conscription, as is now the case. It is likely that physicians with dependents, who have independent means, and whose families are therefore not dependent on the physicians' professional income for support, will be subject to conscription.

It is not so obvious what will be done with the physician under 45 years of age, physically fit, whose social conditions are such as, for an ordinary man, would warrant claim for exemption on account of dependency. It has been repeatedly suggested that physicians could not advance a plea for exemption on the grounds of dependency since they are eligible for a commission and the salary of a commissioned officer is sufficient to support a family. As a matter of fact, it is reported that local boards in some communities have refused to exempt physicians on the ground of dependency for this very reason. On the other hand, Col. J. S. Easby-Smith[1] of the Provost Marshal-General's Office, at the meeting on the selective service regulations at the last annual session of the American Medical Association, said:

> You are considering his case not from the standpoint of a man that is to be commissioned in the Medical Reserve Corps. You are considering him as a man, a drafted man who will get $30 a month and that the government will allow $15 and add to it $15 for a wife. You cannot consider the probability that a medical man who is drafted is going to get a commission. I think you would have to treat him as you would any other registrant from that standpoint.

The proposed increase of the draft ages will perhaps not solve the medical problems of the civilian community and of the Army as easily as they have apparently been solved in England by the application of selective service. In that country, as was pointed out last week, all physicians are called up by the Central Medical War Committee and given the option of taking such civilian medical service as the Central Medical War Committee may assign to them, or of being turned over to the military authorities for commission. In that way the civilian needs of the community, as well as those of the Army, are provided for. While Great Britain is small in area as compared with the United States, at the same time there seems to be no serious obstacle to putting into effect practically the same general scheme here. Of course, it must be remembered that owing to the lax methods of education and licensure in the past, there are some physicians who, although licensed to practice in the state in which they reside, are not able to meet the professional requirements of the Surgeon-General's Office for a commission in the Medical Department of the Army. It is quite probable, however, that there are comparatively few of these within the proposed draft age. It would seem possible, therefore, to formulate regulations which would receive the approval of the Surgeon-General of the Army and of the Provost Marshal-General which would practically place all physicians of draft age under the jurisdiction of the Surgeon-General of the Army. It is the Medical Department of the Army that is primarily interested. The Navy has all the men it needs, and it is the policy of the Bureau of Medicine and Surgery of the Navy not to commission more men than can be put into active service. Placing all the physicians of the country, under 45, at the disposal of the Surgeon-General of the Army would make easy the solution of the problem of securing the required number of medical officers without seriously interfering with the needs of the civilian population, institutions, colleges and hospitals.

1. Physical Examinations Under the Selective Service, THE JOURNAL A. M. A., July 13, 1918, p. 118.

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## IN DEFENSE OF VENEREAL NOSTRUMS

The accusation that the medical profession generally and the American Medical Association in particular is opposed to the sale of all medicaments of the "home-remedy" type, THE JOURNAL has repeatedly denied. It has stated that it believes that under present economic conditions there is a place for remedies of this sort and has suggested certain fundamental principles which should govern the sale of products of this kind. One of these principles is that no preparation should be sold for the treatment of those diseases that are so dangerous to the individual or to the community that they should not be self-treated.

The reasonableness of this requirement is so obvious that one would imagine it would be accepted without question.

The raising of the new army has brought to public attention certain facts that, under normal conditions, might be less patent. Those dealing with the problem of the control of venereal diseases are some of them. In the attempt to prevent the spread of venereal disease and to minimize the danger to health of those suffering from it, it has long been urged that the self-treatment of gonorrhea and syphilis is unjustified, and, *ergo*, that the sale of products for such self-treatment is unwarranted. The majority of decent druggists agree wholly with this stand. Not so that spokesman of the "patent medicine" interests, the *National Druggist*. In its July issue this publication thrashes itself into a verbal fury nearly four pages long against the suggestion which, it claims, emanates from a "Prussianized clique of medical autocrats." Says this representative of the nostrum interests:

> But the latest and, perhaps, the most insidious, application of their knowledge of popular psychology, of their policy of opportunism, is seen in the effort which is now being made to prohibit the sale by druggists of medicines for the treatment of the so-called "private" diseases. There is, of course, not the slightest valid reason why a person, if he so elects, should be deprived of the right to buy and use, or why the druggist should be forbidden to sell, a remedy for one of these diseases than for any other disease or class of diseases.

There is, of course, the best and most obvious of reasons why the public should not attempt to self-treat contagious diseases that are a menace both to the individual and to the community. But any law looking to that result would put the exploiters of the venereal nostrums out of business! The *National Druggist*, after denouncing the American Medical Association and the medical profession, then goes on to explain what the druggists may do should laws be enacted by the various legislatures and be sustained by the courts. Says this drug journal:

> Suppose, which is inconceivable and we believe impossible, the courts should sustain these laws? Even then they could not extend to and embrace any stock of such preparations that the druggist may have on hand at the time the law is enacted. In short, the Legislature cannot make a retroactive law of the kind, so as to destroy property in existence at the time of its passage. This principle is so well established that the druggists may confidently accept and act upon it. There would be, therefore, nothing to prevent his going right ahead and disposing of such of these remedies as he has in stock.

And, apparently, the *National Druggist* sees a way whereby, even when such laws are enacted, they may be evaded by the druggist. Thus:

> But we do not see how such laws can very materially interfere with the sale of remedies for the specified diseases that may be purchased *after* their passage (even granting, for the sake of argument, that they constitute a valid exercise of the police power) provided the druggist sticks to his last, so to speak—by which we mean, if he does not prescribe, recommend or actually sell the remedies *knowingly* for the specified diseases. Take any of these remedies. There is scarcely one of them that is not indicated and prescribed and designed and used for the treatment of various other conditions than those for which it is chiefly intended; and, so, unless the purchaser explicitly states to the druggist that he wants them for, let us say, some venereal disease, there is absolutely nothing to prevent the druggist from supplying them.
>
> What though the druggist may know that the medicine is customarily used for one of the proscribed diseases—he has no right to *assume* that every purchaser wants it for such a purpose. Indeed, the person calling for it may be only a messenger or an errand boy for some one else. [The italics appear in the original.—Ed.]

We wonder how the decent druggists of the country feel after reading such suggestions as those just given. From the large amount of advertising carried by the *National Druggist*—which includes, by the way, in the current issue "Big G," "Knox-It," "C & C Remedy for Men," "Pabst's Okay Specific," etc.—one might get the impression that the publication has more influence in the drug world than seems possible from the editorial pabulum it serves its readers. One thing is certain, if the *National Druggist* does not represent the attitude of the druggists of the country, and we feel sure that it does not, the sooner the druggists repudiate it the better it will be for the honor of that profession.

## Current Comment

### MEDICAL EDUCATION AND THE WAR

When the selective service law was enacted in 1917, medical students were not exempted and there was much concern lest many, if not all, of our medical schools would be forced to close, and that as a result there would be a serious dearth of physicians. Statistics collected by the Council on Medical Education indicated that the first three calls under the draft law would take from 60 to 75 per cent. of all medical students, and series of editorial comments on the subject were published in The Journal.[1] A solution to this problem was found in the National Defense Act of 1915 providing for the Medical Officers' Reserve Corps and also for an Enlisted Medical Reserve Corps in which medical students could be enrolled and retained in the medical schools until they had graduated and completed their hospital intern year. These students are subject to assignment to active duty should an emergency require it. Later it was revealed that unless means of exempting premedical students could be found, the supply of medical students would be curtailed. The proposed Students' Army Training Corps, to be established in colleges and universities, now appears to provide the means of retaining premedical students at their work. Although they will be enlisted men and subject to call in emergency, the policy of the government is to have them stay in college until they complete their training as medical officers. If they do not enter medical schools before they are

1. Medical Students and Conscription, Current Comment, The Journal A. M. A., Aug. 11, 1917, p. 475; Aug. 18, 1917, p. 570; Aug. 25, 1917, pp. 649, 650; Sept. 1, 1917, p. 735, and Sept. 8, 1917, p. 827.

21 years of age—and become enrolled in the Enlisted Reserve Corps—they must register under the selective service and respond to their call. When called, it is planned, their record will be examined and if satisfactory the students will be returned to college so as to complete their premedical and medical work. A third and more vital problem is that relating to the threatened dearth of medical teachers due to the loss of many by enlistment. A solution to this problem appears to have been found in the rule providing for the exemption of those engaged in "essential industries." To meet the situation, each college has been requested by the Surgeon-General to furnish a list of its essential teachers who, it is planned, will not be called to active duty even though they shall enlist, but shall be left at their teaching duties on the ground that they are engaged in an "essential industry."

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### UNIFICATION OF THE ARMY

A general order was issued under date of August 7 to discontinue the use of distinctive appellations for the various branches of the service, such as Regular Army, Reserve Corps, National Army, National Guard, etc., and to use exclusively the single term, U. S. Army. The insignia now prescribed for the Regular Army is hereafter to be worn by all members of the United States Army. In the same way all commissions in various branches shall be regarded as commissions in the United States Army, divided into permanent, provisional or temporary, as fixed by the conditions of their issue. The number of commissions in each grade and in each staff corps are to be kept within the limits fixed by law, but officers are to be assigned without reference to the term of their commissions, solely in the interest of the service. Promotion is to be by selection, except that permanent promotions in the regular Army will continue to be made as prescribed by law. This affects the Medical Department of the Army only to the extent that all medical officers will wear as insignia the U. S. and the caduceus, discontinuing the use of the U. S. R. In the same way, correspondence, orders and articles referring to medical officers will hereafter refer to them only as officers of the Medical Department, U. S. Army.

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### CANNING WITHOUT SUGAR

We have been so accustomed to using large quantites of sugar in the home canning of fruits that the present sugar shortage may lead many to think that sugar is necessary for such preservation. As a matter of fact, commercial canners have for a long time often used only very thin syrups, and in some cases no sugar at all, in the preservation of fruit. The whole problem is simply one of adequate sterilization. While no thoroughly satisfactory method of home canning has yet been devised, particularly for fruit already distributed in cans or jars, wide experience has taught the housewife practical methods of solving her problem. It is to be hoped that some one will be able to develop a satisfactory home pressure cooker so that in the home canning there may be obtained the more complete sterilization that is now possible in commercial establishments. Fruits that are preserved without sugar may have the sugar added at any time. If, before consumption, the fruit is heated up at the same time that the sugar is added, an additional factor of safety will be obtained. Such toxins as that causing botulism are not thermostable. The recent work on botulism indicating the heat resisting power of the spores of the *Bacillus botulinus* demonstrates the wisdom of boiling all canned vegetables and fruits just before they are consumed, particularly if there is any suggestion of fermentation, or if they have a sour butyric acid smell. Considerable work is being done by the Department of Agriculture and in the agricultural colleges and some university laboratories on improvements in the methods of canning, and it is to be hoped that standardized methods can soon be obtained that will have general application in our homes. Too much emphasis cannot be placed on using canning processes based on the well known facts of bacteriology. A slight error in a purely empiric method may lead to a large percentage of spoiling with consequent waste of human food and labor. During the war, particularly, we are anxious to save both.

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### WELL DONE, MINNESOTA

For many years the organized medical profession of Minnesota was satisfied to have the *Journal-Lancet* for its official organ. As time went by, however, the physicians of Minnesota, evidently believing that that great state should be in the vanguard rather than the rear guard of medical journalism, decided to look into the question of publishing its own official organ so that it would have direct control over both editorial and advertising pages. The advertising standard of the *Journal-Lancet* was, and is today, characteristic of nineteenth rather than twentieth century American medical journalism in that it accepts for its advertising pages such "patent medicines" as Pluto Water, Angier's Emulsion, Sal Hepatica, Pepto-Mangan, Fellows' Syrup of Hypophosphites, Listerine, etc., and such pseudoscientific atrocities as Ergoapiol (Smith), Henry's Tri-Iodides, Campho-Phenique, Antiphlogistine, Cystogen, etc. At the annual meeting of the Minnesota State Medical Association in 1916, the House of Delegates of that body appointed a committee to consider and report on the advisability of the association's publishing its own journal. The committee consisted of five members; four of these members brought in a report unfavorable to making the change that would put Minnesota in control of its own journal. The fifth member looked into the matter with a good deal of thoroughness, got together a large amount of data showing not only the advantages, ethical and professional, that would accrue to the Minnesota State Medical Association in having its own publication, but also pointing out the highly objectionable advertising carried by the *Journal-Lancet*, which at that time was the journal of the association, and this member of the committee favored the change. It speaks well for the good sense and high standard of the Minnesota physicians when it is stated that the House of Delegates adopted

the minority report and decided that Minnesota should have its own journal commencing with January, 1918. *Minnesota Medicine* was the result, and up to date eight numbers have been issued. The journal is a credit, not only to Minnesota, but to the medical journalism of the country. Its advertising pages are clean (it takes advertisements of no proprietary remedies that have not been passed on by the Council on Pharmacy and Chemistry and accepted for inclusion in New and Nonofficial Remedies), the standard of its reading pages is high and, being independent of nostrum domination, it gives its readers the facts regarding the nostrum evil as it affects both the medical profession and the public. In a word, Minnesota now has a medical journal of which any state association might be proud.

## ARSPHENAMIN ELIMINATION

Danysz[1] has presented what appears to be a plausible explanation of the manner in which arsphenamin is eliminated after its intravenous injection, and along with this an explanation of the causes of serious or fatal reactions. If the simple explanation given is correct that accidents can be largely eliminated by the use of the proper amount of alkali in making up the solutions, and that most of the different types of reaction are explained on the basis of the same mechanism, the observations of Danysz will prove of inestimable value. While we can hardly hope that reactions can be prevented to the extent indicated by this author, nevertheless his suggestions deserve careful consideration, and it is hoped that experimental data will be forthcoming that will disprove or prove the conclusions of Danysz on this important subject.

## COEDUCATION IN MEDICINE

The world war has given added impetus to the tendency on the part of medical colleges to throw open their doors to women students. During the last three or four years this action has been taken by several of the largest medical schools in the United States and Canada: in 1914 by the Medical School of the University of Pennsylvania; in 1915 by the Tulane University of Louisiana; in 1916 by the Columbia University College of Physicians and Surgeons; in 1917 by the University and Bellevue Hospital Medical College, by the University of Maryland and the Medical College of Virginia, and in the present year by Harvard University Medical School and by the Medical Faculty of McGill University. The idea of granting equal opportunities for the two sexes in medical schools, however, had already made rapid advancement before the world war. More than forty years ago the University of Michigan made its courses in medicine coeducational, and practically all state universities have followed the example. From the time of its organization in 1893, the Medical Department of Johns Hopkins University has admitted women. In New York City the Women's Medical College of the New York Infirmary closed its doors only after Cornell University in 1898 had established its medical school and admitted women students. In 1902 Rush Medical College, which had formed a close affiliation with the University of Chicago, became coeducational. At the present time, therefore, of the ninety colleges existing in the United States, sixty admit both sexes. The general adoption of coeducation by medical schools is a fitting recognition of the splendid work toward winning the war which is being done by women, both in medical and other lines.

## CHIROPRACTORS—QUACKERY BY WHOLESALE

The public is rapidly becoming rid of quacks from the medical profession through merciless exposure by the medical and lay press and through prosecution in many states under the medical practice laws. A more dangerous type of quackery, however, is represented by the various pseudomedical cults—more dangerous because they are built on fallacies, misrepresentations and extravagant claims in regard to the cure of diseases. Most flagrant is "chiropractic." Followers of this cult are sending circulars through the mails and publishing advertisements in newspapers—sometimes utilizing whole pages—claiming that by a simple manipulation of a portion of the spine they can cure all diseases from toothache and felons to apoplexy, locomotor ataxia, nephritis and epilepsy. The menace of their pretensions is shown in their claim to cure infantile paralysis—a serious disease even in the hands of the most skilled and thoroughly trained physician. The utter absurdity of their claims is indicated by the fact that they are not trained in the simplest rudiments of medical knowledge, and avowedly turn their backs on all modern scientific methods. A prominent representative of chiropractic, as revealed in the investigation by Mr. Justice Hodgins, whose report on Medical Education in Ontario was recently commented on,[1] stated that "chiropractors have no earthly use for diagnosis"; that bacteriology was of "no value to the chiropractor"; that it was "not worth the while to spend time, energy and money to microscopically examine the infinitesimal mites"; that chiropractors "abhor the very name of drugs and repudiate their use," and that chemistry "has nothing in common with chiropractic and cannot be made an adjunct to it." B. J. Palmer, the "founder of chiropractic," also stated in the same investigation that he did not believe in bacteria and that "bacteriology was the greatest of all gigantic farces ever invented for ignorance and incompetency," and as to analysis of blood and urine, he considered it of no value. This is the man who terms his college "the fountain head of chiropractic"! That such bigoted and egotistic incompetence should be permitted to practice the healing art and to prey on a credulous public is as astounding as it is contrary to common sense. It is deplorable that hordes of these ignorant practitioners are being turned out each year from institutions representing this and other cults—institutions which would not exist were it not for the lack of ample safeguards over the chartering of edu-

1. Danysz, J.: Ann. d. l'Inst. Pasteur, 1917, **31**, 114; abstr., The Journal A. M. A., this issue, p. 596.

1. Medical Education in Ontario, editorial, The Journal A. M. A., July 6, 1918, p. 42.

cational institutions. If these practitioners were physicians they would be subject to early and severe prosecution under the medical practice laws and to severe arraignment by the medical press as violators of all the rules of medical ethics and medical decency. But in some states they have secured exemption from medical practice laws under another fallacious claim, that they are "not practicing medicine." It is high time that the sick should be protected from such dangerous incompetents and that those who prey on the afflicted, under the pretense of having discovered new methods of treatment, should be prosecuted for obtaining money under false pretenses.

## *Medical Mobilization and the War*

### Physicians May Still Enroll in the Medical Reserve Corps

The newspapers of August 14 carry an announcement that on August 13 the Secretary of War issued an order "prohibiting the granting of commissions in the Army to men in civil life between the proposed draft ages of 18 to 45. Students in officers' training camps will be permitted to complete their courses and civilians not in training camps whose applications were approved before the order was issued will be given commissions." Presumably this does not apply to the commissioning of physicians in the Medical Reserve Corps and the Medical Reserve Force of the Navy any more than did the order under date of August 8 which suspended further volunteering and the receipt of candidates for officers' training camps, which, it has been announced, did not apply to commissioning of physicians.

### Personnel of the Medical Department

For the week ending Aug. 9, 1918, the personnel of the Medical Department of the Army included:

MEDICAL CORPS: 933, including 1 major-general, 64 colonels, 112 lieutenant-colonels, 296 majors and 460 lieutenants.

MEDICAL RESERVE CORPS: 23,063, including 1 colonel, 4 lieutenant-colonels, 1,531 majors, 6,894 captains and 14,633 lieutenants. On active duty: 22,706, including 1 colonel, 2 lieutenant-colonels, 1,516 majors, 6,737 captains and 14,450 lieutenants.

MEDICAL CORPS, NATIONAL GUARD: 1,195, including 22 lieutenant-colonels, 263 majors, 257 captains and 653 lieutenants.

MEDICAL CORPS, NATIONAL ARMY: 362, including 6 brigadier-generals, 87 colonels, 259 lieutenant-colonels, 9 majors and 1 captain.

THE DISCHARGES to date are:

| Causes— | Number | | |
|---|---|---|---|
| | M.C.N.A. | M.R.C. | M.C.N.G. |
| Physical disability | 0 | 760 | 56 |
| Inaptitude | 0 | 285 | 22 |
| Other branches of service | 3 | 645 | 75 |
| Resignations | 0 | 200 | 34 |
| Domestic troubles | 0 | 61 | 1 |
| Needed by community | 1 | 49 | 0 |
| Deaths | 1 | 102 | 7 |
| Dismissals | 0 | 17 | 4 |
| Duty completed | 0 | 3 | 0 |
| No reason given | 0 | 15 | 1 |
| | 5 | 2,137 | 200 |

### War Department Does Not Authorize Raising of Hospital Funds by Individuals

The War Department announces that it does not authorize the collection of money by individuals for the erection of military hospitals, since it has sufficient funds for the building of all hospitals needed to care for sick and wounded soldiers. Congress has appropriated all money required for this purpose up to the present time, and it is reasonable to assume that it will continue to do so.

### Proportion of Various Types of Disability

In a recent issue the *Vocational Summary*, published by the Federal Board for Vocational Education, quotes the following interesting statistics of the character of the wounds and diseases of disabled men pensioned by the British government. These were given in the House of Commons on May 28, by Mr. Hodge, minister of pensions. Up to the end of April, 1918, Mr. Hodge said the number of disabled men who had received pensions was 341,025. He had worked out the percentages of different forms of disablement, and these were as follows:

| | Per Cent. |
|---|---|
| Eyesight cases | 2.8 |
| Wounds and injuries to legs necessitating amputation | 2.6 |
| Wounds and injuries to arms necessitating amputation | 1.4 |
| Wounds, etc., to legs not necessitating amputation | 11.9 |
| Wounds, etc., to arms not necessitating amputation | 8.45 |
| Wounds, etc., to hands not necessitating amputation | 4.45 |
| Wounds, etc., to head | 4.0 |
| Hernia | .8 |
| Miscellaneous wounds and injuries | 5.55 |
| Chest complaints and tuberculosis | 11.60 |
| Rheumatism | 6.5 |
| Heart disease | 10.3 |
| Epilepsy | 1.0 |
| Nervous diseases, shell shock, etc. | 6.0 |
| Insanity | .75 |
| Deafness | 2.0 |
| Frostbite, including cases of amputation of feet or legs | .9 |
| Miscellaneous diseases | 18.36 |

Mr. Hodge further said that in the employment of disabled soldiers an armless man would probably in future be their greatest difficulty. Out of seventy messengers in the ministry of pensions, fifty-five were one-armed men.

### Military Mobilization of the Medical Profession

The War Committee of the Nebraska State Medical Association has developed and is putting into practice a plan which originated from suggestions made at the conference of state secretaries held at the headquarters of the Association, April 30, 1918. This plan was formulated after some consultation with the Association office and is, we believe, feasible and practicable. Moreover, it is a plan that can readily be adapted to the conditions which prevail in each of the states. The *Nebraska State Medical Journal* for July, 1918, contains this announcement of the Nebraska State Medical Asociation.

MEDICAL RESERVE PLAN

In consequence of a decided misapprehension which seems to be prevalent among the members of the profession in the state relative to the councilor-district plan of designating medical men for the Medical Reserve Corps of the Army, the following statement is published. The plan referred to is simply this:

The councilor of each district, and one member of each county society in the district, will constitute a board for the selection of the members of the profession in such district, who shall report for examination for the Medical Reserve Corps. The number to be selected will be in accordance with the number required to fill the quota of the district. Those selected in this way will be designated for examination and their names will be sent by the councilor of the district to Col. J. M. Banister, U. S. Army, chairman of the State War Board. The necessary instructions will be given them by Colonel Banister, blanks sent to them, and a date appointed for the examination of each. No one in the district will be examined except those specifically designated by the board having jurisdiction in each case.

This provision will have no bearing on members of the profession who may desire to volunteer and enter the service directly. Such physicians can always have an opportunity to enter the service as heretofore.

Col. J. M. Banister, Chairman; Dr. John E. Summers, Dr. Ewing Brown, Dr. Charles L. Mullins, Dr. Joseph M. Aikin, War Committee of the Nebraska State Medical Association.

The details of the proposition are that:

1. A war committee is to be constituted in each councilor district. This committee is made up of a representative elected by the physicians of each of the counties included in the councilor district. The councilor of the district is the chairman of the committee.

2. All physicians under 55 years of age agree each with the other that each of them files out an application for a commission in the Medical Reserve Corps of the Army or the Medical Reserve forces of the Navy, and pledge themselves to accept the commission, if it is awarded.

3. The war committee of the council or district collects the applications and indicates the order in which the applicants are to be called.

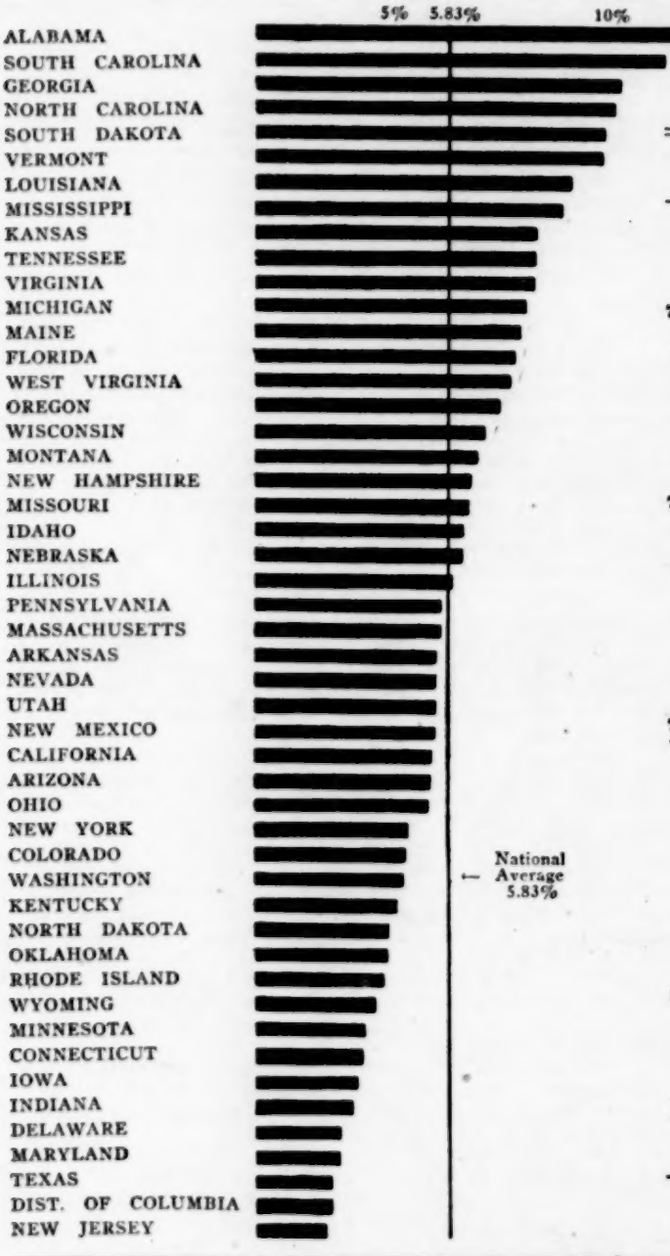
4. The war committee of the state association files these applications for the following disposition:

(*a*) If the quota of physicians from the district, needed for military service, is not supplied, the applicants shall be called in sufficient numbers and in order to present themselves for examination.

(*b*) If the quota is provided, the applications are held until another increment is called for by the Surgeon-General, when the number of applicants required to meet the new demand shall be called for examination.

## PERCENTAGE OF REGISTRANTS INDUCTED AND REJECTED

The following chart and table prepared by the Office of the Provost Marshal-General indicate the relative number of registrants inducted and rejected in the various states for the period from Feb. 10 to July 10, 1918:




RECORD FROM FEB. 10, 1918, TO DATE INDICATED

| | United States | Inducted | Accepted | Rejected | Per Cent. Rejected |
|---|---|---|---|---|---|
| | Alabama | 11,759 | 9,705 | 2,054 | 17.46 |
| | Arizona | 3,257 | 3,088 | 169 | 5.18 |
| | Arkansas | 18,473 | 17,470 | 1,003 | 5.42 |
| | California | 14,851 | 14,074 | 777 | 5.23 |
| | Colorado | 7,380 | 7,056 | 324 | 4.39 |
| 7/13 | Connecticut | 11,904 | 11,534 | 370 | 3.10 |
| | Delaware | 1,363 | 1,329 | 34 | 2.49 |
| | District of Columbia | 2,679 | 2,622 | 57 | 2.12 |
| | Florida | 9,225 | 8,517 | 708 | 7.67 |
| | Georgia | 21,765 | 19,403 | 2,362 | 10.85 |
| | Idaho | 3,640 | 3,413 | 227 | 6.23 |
| | Illinois | 80,360 | 75,653 | 4,707 | 5.86 |
| | Indiana | 24,135 | 23,440 | 695 | 2.87 |
| | Iowa | 19,908 | 19,309 | 599 | 3.00 |
| | Kansas | 11,980 | 10,978 | 1,002 | 8.36 |
| 7/10 | Kentucky | 19,634 | 18,828 | 806 | 4.10 |
| | Louisiana | 15,650 | 14,101 | 1,549 | 9.89 |
| | Maine | 4,285 | 3,945 | 340 | 7.93 |
| | Maryland | 9,728 | 9,488 | 240 | 2.46 |
| | Massachusetts | 20,837 | 19,690 | 1,147 | 5.50 |
| | Michigan | 37,682 | 34,654 | 3,028 | 8.03 |
| | Minnesota | 26,219 | 25,387 | 832 | 3.17 |
| | Mississippi | 14,415 | 13,099 | 1,316 | 9.12 |
| | Missouri | 22,865 | 21,407 | 1,458 | 6.37 |
| | Montana | 7,138 | 6,665 | 473 | 6.62 |
| | Nebraska | 8,462 | 7,934 | 528 | 6.23 |
| | Nevada | 483 | 457 | 26 | 5.38 |
| 7/11 | New Hampshire | 2,652 | 2,481 | 171 | 6.44 |
| | New Jersey | 29,760 | 29,184 | 576 | 1.93 |
| | New Mexico | 3,262 | 3,090 | 172 | 5.27 |
| | New York | 89,732 | 85,663 | 4,069 | 4.53 |
| | North Carolina | 19,228 | 17,174 | 2,054 | 10.68 |
| | North Dakota | 7,250 | 6,967 | 283 | 3.90 |
| | Ohio | 51,614 | 48,978 | 2,636 | 5.10 |
| | Oklahoma | 16,903 | 16,256 | 647 | 3.82 |
| | Oregon | 5,754 | 5,334 | 420 | 7.29 |
| | Pennsylvania | 65,640 | 62,018 | 3,622 | 5.52 |
| | Rhode Island | 4,363 | 4,198 | 165 | 3.78 |
| | South Carolina | 7,613 | 6,692 | 921 | 12.09 |
| | South Dakota | 5,144 | 4,611 | 533 | 10.36 |
| | Tennessee | 17,297 | 15,851 | 1,446 | 8.35 |
| | Texas | 32,811 | 32,087 | 724 | 2.20 |
| 8/12 | Utah | 3,155 | 2,987 | 168 | 5.32 |
| | Vermont | 2,490 | 2,232 | 258 | 10.36 |
| | Virginia | 15,118 | 13,887 | 1,231 | 8.14 |
| | Washington | 7,845 | 7,507 | 338 | 4.30 |
| | West Virginia | 15,256 | 14,106 | 1,150 | 7.53 |
| | Wisconsin | 22,148 | 21,555 | 1,593 | 6.88 |
| | Wyoming | 3,145 | 3,034 | 111 | 3.52 |
| | Totals | 859,257 | 809,138 | 50,119 | 5.83 |

### Wounded

Lieut. John P. Kerrigan, M. R. C., U. S. Army, Ludlow, Vt., was reported, August 5, to have been severely wounded.——Capt. Henry Edgar Bunch, Jr., M. R. C., U. S. Army, Kennecott, Alaska, was reported, July 27, to have been wounded while on duty overseas.——Capt. William Joseph Condon, M. R. C., U. S. Army, New Brunswick, N. J., was reported on July 30 to have been severely wounded.——Major Howard W. Beal, M. R. C., U. S. Army, Worcester, Mass., was reported on August 1 to have been severely wounded.——Lieut William A. Toland, M. R. C., U. S. Army, Pottstown, Pa., is reported to have been slightly wounded by the premature explosion of a shell.

### Awards for Merit

Dr. Daisy M. Orleman Robinson, New York City, has been awarded the medal of honor by the Minister of War of France in recognition of her service for the French wounded as assistant to Dr. Paul Gaston, Montpellier.——Lieut. Charles Wesley Myers, M. R. C., U. S. Army, Benbush, W. Va., is reported to have received the Distinguished Service Cross.——Dr. Daniel E. Berney, Scranton, has been awarded the Military Cross by the British government for gallantry on the battlefield.——Lieut. William H. Howell, M. R. C., U. S. Army, Chicago, attached to the Royal Army Medical Corps, was mentioned in orders, July 25, on account of gallantry and initiative.

## COMMISSIONS ACCEPTED, MEDICAL RESERVE CORPS, U. S. ARMY

Previous lists published in THE JOURNAL, June 1, 22 and 29, July 13, 20 and 27, August 3 and 10.

### *ALABAMA*

Courtland—Ussery, J. A.
Ensley—Sparks, D. H.
Montgomery—McConnico, F. H.

### *ARKANSAS*

Crossett—Mathews, W.
Matthews, W. M.
Ft. Smith—Dorente, F. R.
Little Rock—Norwood, F. A.

### *CALIFORNIA*

Downey—Haygood, A. G.
Los Angeles—Byron, R. L.
Ross, M. H.
Oakland—Clark, J. E.
Drucks, E. S.
Smith, A. M.
Pomona—Smith, R. L.
San Francisco—Calvi, P. J.
Santa Monica—Reed, E. N.
Stockton—Priestly, W. F.
Taft—Jones, A. A.

### *COLORADO*

Cripple Creek—Brinton, W. T.
Greeley—Woodcock, B.

### *CONNECTICUT*

Bridgeport—Foley, M. J.

### *DISTRICT OF COLUMBIA*

Washington—Eichenlaub, F. J.

### *FLORIDA*

Jacksonville—Holden, G. R.

### *GEORGIA*

Athens—Stewart, J. S., Jr.
Ballicoch—Reed, C.
Bronwood—Bowman, R. E.
Canton—Coker, N. J.
Chipley—Avery, R. M.
Columbus—Baker, E. L.
Griffith, R. P.
Douglas—Clark, T. H.
Touchten, G. L.
Kingston—Ellis, C. L.
Macon—Daniel, O.
Diehl, J. E.
Marshallville—Frederick, D. B.
Rome—Garrard, J. L.
Simmons, R. O.
Savannah—Waring, A. J.
Williams, L. W.

### *IDAHO*

Orofino—Fairly, J. M.

### *ILLINOIS*

Auburn—White, J. V.
Buffalo—Lutyons, G. B.
Canton—Scholes, P. S.
Charleston—Greer, C. E.
Chicago—Davis, J. F.
Furno, P. H.
Goldstine, M. T.
Holinger, O.
Hurwitz, E.
Krohn, W. O.
Loewenberg, L. A.
McMullen, C. J.
Meyer, J. T.
Miller, H. C.
Monaco, D. F.
Norton, F. J.
Scheier, A. M.
Springwater, S. A.
Washburn, J. M.
Cicero—Maha, F. J.
Fossland—Colwell, J. B.
Harvard—Eaton, H. D.
McLeansboro—Johnson, J. A.
Moline—Beam, H. A.
Oak Park—Sylvester, F. M.
Peoria—Ernst, J. R.
Rockton—Maurican, V. B.
Springfield—Bierly, J. R.
Paton, C. L.
Trapp, A. R.
Zeigler—Moore, J. B.

### *INDIANA*

Bluffton—Redding, J. L.
Evansville—Barnes, W. E.
Fairmont—Aldrich, H.
Fishers—Black, V. G.
Fortville—Hervey, S. W.
Gary—King, E. P.
Hebron—Kleinman, F.
Indianapolis—Brauchla, H. C.
Caymack, J. W.
Devaney, M. O.
Indianapolis—Miliken, R. A.
Stafford, L. H.
Jeffersonville—Funk, A.
Threlkeld, G. W.
La Porte—Thompson, H. J.
Petersburg—Clark, S. R.
Richmond—Fouts, J. M.
Terre Haute—Hewitt, J. H.
Yung, J. R.
West Point—Roweland, C. L.

### *IOWA*

Dubuque—Mehlhop, C. W.
Mason City—Smith, A. D.
Nevada—Houston, B.
Newton—Wood, R. W.
Reinbeck—Bartruff, C. H.
Waterloo—Sage, F. C.

### *KANSAS*

Atchison—McKeehan, L. R., Sr.
Emporia—Corbett, O. J.
Wichita—Cheney, J. W.
Davidson, H. T.
Ebright, E. D.

### *KENTUCKY*

Bradford—Comer, B. N.
Calvert City—Edleman, O. A.
Kirbyton—Pease, T. A.
Louisville—Brzozowski, G. S.
Liggett, H. T.
Ramey, C.
Water Valley—Bard, C. B.

### *MAINE*

Bangor—Taylor, C. J.

### *MARYLAND*

Baltimore—Baylor, J. W.
Fenby, J. S.
Johnson, H. H.
Nachlas, I. W.
Hagerstown—Grove, G. H.
Rising Sun—Dodson, R. C.
Westminster—Sullivan, E. M.

### *MASSACHUSETTS*

Boston—Ceconi, J. A.
Felch, G. A.
Sturgis, C. C.
Wright, W. L.
Brockton—Cloudman, H. R.
Mara, J. L.
Fitchburg—Grieumard, G. A.
Holyoke—St. George, F. M.
Lawrence—Murphy, T. W.
Lynn—Courtemanche, J. A.
Marblehead—Eveleth, S. C.
Melrose—Sims, F. R.

### *MICHIGAN*

Brown City—Waltz, J.
Detroit—Ashley, L. B.
Carey, C.
Droock, V.
Hathaway, J. D. H.
Merrill, W. O.
Simons, W. N.
Young, R. K.
Grand Lodge—Schilz, E. A.
Lansing—Murphy, C. H.
Rulison, J. G.
Muskegon—Hannum, F. W.
Orion—Hathaway, C. L.
Port Huron—Patterson, D. W.

### *MINNESOTA*

Bricelyn—Gussixson, A.
Duluth—Linneman, N. L.
Glenville—Freeman, J. P.
Hallock—Shaleen, A. W.
Mantorville—Adams, R. T.
Minneapolis—Dahl, J. A.
Schmidt, K. H.
Schmitt, S. G.
Ulrich, H. L.
St. Paul—Hilger, A. W.

### *MISSISSIPPI*

Hattiesburg—Ross, T. E., Jr.
Indianola—Bernard, B. C.
Louin—Montgomery, G. W.
Richton—Graves, W. R.
Tonnolen—Ruff, C.

### *MISSOURI*

Berger—Wagner, W. H.
Creighton—Levens, W. B.
Fair Grove—Edmondson, M. T.
Gower—Reynolds, S. D.
Helena—Carpenter, E. H.
Holcomb—Drace, C. C.
Joplin—Chapman, T. E.
Kansas City—McCartney, O. P.
Middleton, J.
Lowry City—Peeler, E. C.
Monett—West, W. M.
Newark—Pierce, D.
Otterville—Fogle, R. L.
Sedalia—Walker, E. R.
Springfield—Horst, O. C.
St. Louis—Farrell, J. A.
Gross, J. H.
Hoberecht, C. A.
McIntire, J. C.
Salisbury, W. J.
Senseney, E. T.
Westlake, S. B.
Urich—McDonald, J. G.

### *NEBRASKA*

Beatrice—Buckley, F. W.
Beldon—Fletcher, F. W.
Fremont—Reeder, G. S.

### *NEW HAMPSHIRE*

Lancaster—Carpenter, H. B.
Manchester—Wilkins, G. C.
Portsmouth—Johnston, C. E.

### *NEW JERSEY*

Millville—Sheppard, F. R.
Newark—Blumberg, L. S.
Ponollo, J. N.
Paterson—Botbyl, B. W.
Golding, H. N.
Red Bank—Magee, D. M. P.
Trenton—Treiber, B. A.

### *NEW MEXICO*

Albuquerque—Sheridan, W. M.
Roswell—Pressley, T. E.
Swearingen, D. D.

### *NEW YORK*

Albany—Bellin, M.
Bedford Hills—Briggs, E. F.
Brooklyn—Grossman, A.
Johnson, A. A. J.
Leahy, S. R.
Stone, A.
Volk, L. D.
Ft. Wright—Lindeman, C. E.
Little Valley—Hillsman, M. L.
Mooers—Taylor, A. B.
New York—Adams, E.
Beck, B. J.
Davidson, L. R.
Diamond, B.
Farr, C. E.
Frankfeldt, F. M.
Harrington, J. J.
Lowry, D.
Rogowitz, C. S.
Ryan, T. J.
Oswego—Halsey, W. M.
Ringland, J. B.
Owasco—Ford, N. B.
Poughkeepsie—Krieger, W. A.
Waverly—McNamara, J. J.

### *NORTH CAROLINA*

Hope Mills—Bradford, B. M.

### *NORTH DAKOTA*

Devils Lake—Moeller, T. O. E.

### *OHIO*

Akron—Wells, J. J.
Cambridge—Wells, H. L.
Cleveland—Berr, A. H.
Cable, C. H.
Konrad, E. C.
Lyle, J. A.
MacLachlan, J.
Motto, M. P.
Thompson, H. S.
Columbus—Waite, H. C.
Delphos—Tillotson, J. R.
Mt. Gilead—Johnston, T. P.
Ridgeville Corners—Slosser, D. J.
Salem—Derfus, L. F.
Shelby—Busby, J. L.
Southington—Kennedy, S. V.
Toledo—Bowman, G.
Wright, G. N.
Van Wert—Sampsell, J. B.
Youngstown—Parillo, G. A.

### *OKLAHOMA*

Boswell—McPherson, V. L. D.
Chelsea—Howard, W. A.
El Reno—Runkel, R. E.
Haileyville—Browning, R. L.
Kingston—Gordon, T. M.
Oklahoma City—Cooper, J. M.
Shawnee—Gallaher, W. M.
Tulsa—Price, H. P.
Wilburton—Munn, J. A.

### *PENNSYLVANIA*

Easton-Correll, P. R.
Edgewood—Moreland, G. B.
Chambersburg—Wright, F. G.
Columbus—Reeser, R.
Heckscherville—Sweeney, J. J.
Iselin—Nevins, H.
Lewisburg—Gundy, C. A.
Minersville—McGurl, T. J.
Moon Run—Burkett, J. W.
New Kensington—Koontz, D. M.
Philadelphia—Barry, W. D.
McCandlish, H. S.
Smyth, C. M.
Thoen, C. L.
Pittsburgh—Anderson, J. H. W.
Behan, R. J.
Kamens, A. F.
Lasday, L.
Magoffin, M. B.
Shaw, J. P.
Utley, F. B.
Williams, I.
Reading—Alexander, R. M.
Ridgeway—Shal, W. C.
Selinsgrove—Johnston, R. W.
Sharon—Massy, H. E.
Stoneboro—Ferringer, J. E.
Stroudsbury—Levering, W. R.
Sunbury—Gass, H. W.
Uniontown—Griffin, G. H.
Wapwallopen—Santee, C. L.
Weatherby—Freyman, I. E.
Wilkes-Barre—Laux, L. J.
Williamsport—Harley, J. P.
Willock—Lake, H. S.

### *SOUTH CAROLINA*

Abbeville—Gambrell, C. O.
McCormick—Fuller, R. M.
Mullins—Martine, F. L.
Pickens—Valley, J. L.
St. Matthews—Raysor, H. C.
Union—Sarratt, S. G.

### *SOUTH DAKOTA*

Mitchell—Gillis, F. D.
Yankton—Hohf, S. M.

### *TENNESSEE*

Knoxville—Bomar, F. H.
Lexington—Davidson, C. L.
Memphis—Chilton, C. M.
Nashville—Davis, M. B.
Sikes, A. T.
Neptune—Frazier, R. P.
Ripley—Sanford, W. V.

### *TEXAS*

Antelope—Hilburn, R. E.
Canadian—Teas, F. D.
Dallas—Ferguson, R. C.
El Paso—Armistad, E. K.
Rheimheiner, E. W.
Gonzales—Penrod, L.
Handley—Lorimer, W. S.
Houston—Dickson, T. A.
Paris—Ramsey, F. D.
Victoria—Borden, J. L.
Waco—Brooks, C. H.

### *UTAH*

Ogden—Ingebretsen, P.

### *VERMONT*

Burlington—Avery, R. E.
Crossman, E. O.
Randolph—Gifford, J. P.
Windsor—Martin, S. S.

### *VIRGINIA*

Quantico—Smith, E. D.
Roanoke—Keyser, L. D.
Richmond—Sycle, M. C.

### *WASHINGTON*

Arlington—Harris, J. E.
Kennewick—Crosby, F. M.
Kent—Taylor, O.
Seattle—Jordan, A.
Waitsburg—Mount, H. A.

### *WEST VIRGINIA*

Fairmont—Peters, A. L.
Newburg—Fortney, F. D.
Newell—Turk, H. A.

### *WISCONSIN*

Fond du Lac—Harris, F. M.
Lander—Cooper, A. H.
Milwaukee—Grotjan, W. F.
Salinko, S.
Monroe—Collentine, G. E.
Princeton—Doyle, J. N.
Superior—Sanders, A. O.

### *WYOMING*

Sheridan—Newell, M. A.

## CORRECTION

In the issue of August 3, under the heading "Orders to Officers of the Medical Reserve Corps," appears the order of Lieut. GEORGE M. SMITH, of Waterbury, Conn., to Camp Shelby, Hattiesburg, Miss., base hospital, from the Mayo Clinic. This item should have appeared under the Wisconsin orders, since Lieutenant Smith's home is at Chippewa Falls, Wis.

Under "Commissions Accepted in the United States Naval Reserve Force," the name of H. S. Brown, Adah, Pa., is listed. Dr. Brown of Adah informs us that he has not applied for a commission in the Navy.

## ORDERS TO OFFICERS OF THE MEDICAL CORPS; MEDICAL CORPS, NATIONAL ARMY, AND MEDICAL CORPS, NATIONAL GUARD

*To Camp Beauregard*, Alexandria, La., to examine the command for nervous and mental diseases, from Camp Wheeler, Major R. N. GREENE.

*To Camp Custer*, Battle Creek, Mich., for duty, from Northwestern Department, Capt. D. M. STEWART, Lieut. H. T. BIBBER.

*To Camp Devens*, Ayer, Mass., base hospital, from New York, Major A. B. DAVIS.

*To Camp Dix*, Wrightstown, N. J., for duty, from Camp Gordon, Lieut. A. E. PAGAN.

*To Camp Forrest*, Chickamauga Park, Ga., for duty, from Northeastern Department, Capt. J. W. SWEENEY, Lieut. F. H. BECKETT; from Southeastern Department, Lieuts. J. P. JONES, W. O. WRIGHTSON.

*To Camp Fremont*, Palo Alto, Calif., as commanding officer of base hospital, from San Francisco, Lieut.-Col. W. H. WINTERBERG.

*To Camp Lewis*, American Lake, Wash., for duty, from Camp Kearney, Major H. ROGERS.

*To Camp Meade*, Admiral, Md., as assistant to camp surgeon, from Fort Constitution, Major O. H. STANLEY.

*To Camp Sheridan*, Montgomery, Ala., base hospital, from Camp Shelby, Major R. H. SKILLERN.

*To Camp Wheeler*, Macon, Ga., base hospital, from Washington, D. C., Col. L. T. HESS.

*To Canal Zone* for duty, from Fort Snelling, Col. H. S. GREENLEAF.

*To Chicago, Ill.*, for duty, from Canal Zone, Col. F. T. WOODBURY.

*To Corpus Christi, Texas*, for duty, from Southern Department, Major H. B. McMURDO.

*To Fort Oglethorpe* for instruction, Lieut. P. McDERMID.

*To Fort Riley* as commanding officer of base hospital, from Camp Fremont, Col. E. B. FRICK.

*To Governors Island, N. Y.*, for physical examination, Major H. P. HARRIS.

*To Hoboken, N. J.*, for duty, from Army Medical School, Lieuts. M. R. BROMAN, D. A. GREGORY, E. B. SAYE, from Camp Bowie, Lieut. W. P. FITE.

*To New Haven, Conn.*, Yale Army Laboratory School, for duty, from Fort Leavenworth, Major W. E. CHAMBERS.

*To Rockefeller Institute* for special instruction, from Army Medical School, Lieut. S. H. CURTIS.

*To Washington, D. C.*, for duty, from Fort Riley, Col. F. R. KEEFER. For duty in the Surgeon-General's Office, from Fort Riley, Col. E. R. SCHREINER.

*Honorably discharged* on account of physical disability existing prior to entrance into the service, Lieut. M. B. HOLZMAN.

## ORDERS TO OFFICERS OF THE MEDICAL RESERVE CORPS

### Alabama

*To Camp Bowie*, Fort Worth, Tex., for duty, from Camp Hancock, Lieut. J. K. LEGARE, Forkland, from Western Department, Lieut. J. F. HUGHES, Athens.

*To Camp Crane*, Allentown, Pa., for duty, from Camp Meade, Lieut. M. ROWE, Mobile.

*To Camp Forrest*, Chickamauga Park, Ga., for duty, from Northeastern Department, Lieut. H. BOXER, Birmingham.

*To Camp Joseph E. Johnston*, Jacksonville, Fla., base hospital, Lieut. J. T. ELLIS, Dothan.

*To Camp Lee*, Petersburg, Va., as orthopedic surgeon, from Fort Oglethorpe, Lieut. P. M. KYSER, Birmingham. Base hospital, Lieut. D. J. LONG, Birmingham.

*To Camp Pike*, Little Rock, Ark., for duty, from Camp McClellan, Lieut. N. I. WOOD, Birmingham; from Camp Sheridan, Capt. T. B. HUBBARD, Montgomery.

*To Camp Wheeler*, Macon, Ga., base hospital, from Camp Gordon, Capt. A. C. CAMERON, Birmingham. For duty, Capt. C. J. WATTERSON, Birmingham.

*To Fort Oglethorpe* for instruction, Capts. J. M. BARFIELD, Lineville; L. JONES, Selma; Lieuts. W. H. ANDERSON, Athens; J. O. GRIFFIN, Goodwater; E. M. NORTON, Valley Head; B. C. RUDDER, Walker Springs.

*To Fort Slocum, N. Y.*, for duty, from New Haven, Lieut. A. D. McFADDEN, Ariton.

*To Hoboken, N. J.*, for duty, from Camp Crane, Capt. J. L. BOOTH, Buhl.

*To Newport News, Va.*, for duty, from Fort Oglethorpe, Capt. J. McP. LOWREY, Birmingham.

*To report to the governor of Alabama* for duty as medical aide, Lieut. M. D. SMITH, Prattsville.

The following order has been revoked: *To Hoboken, N. J.*, base hospital, from New York, Capt. R. D. BROWN, Whistler.

### Arizona

*To Camp Grant*, Rockford, Ill., for duty, from Chicago, Lieut. J. L. PRITCHARD, Winsboro.

*To Fort Oglethorpe* for instruction, from Camp Shelby, Lieut. E. B. THOMPSON, Benson.

*To Fort Riley* for instruction, Lieuts. T. P. MANNING, Flagstaff; R. E. POOLE, Mayer.

*Honorably discharged* on account of physical disability existing prior to entrance into the service, Capt. J. E. BACON, Miami.

### Arkansas

*To Camp Gordon*, Atlanta, Ga., as orthopedic surgeon, from Fort McPherson, Lieut. R. A. WOLFF, Little Rock.

*To Camp MacArthur*, Waco, Texas, base hospital, from Camp Sheridan, Capt. J. J. SHERRILL, Warren.

*To Fort Oglethorpe* for instruction, Lieuts. W. D. LASSITER, Bierne; E. C. MOULTON, Fort Smith; F. A. NORWOOD, Little Rock.

*To Fort Ontario, N. Y.*, base hospital, from Fort McPherson, Lieut. F. S. WATSON, Amity.

*To Fort Riley* for instruction, Capt. F. O. ROGERS, Little Rock; Lieuts. W. M. MATTHEWS, Crossett; E. BAKER, Dermott; J. R. REINBERGER, Pine Bluff; C. V. POWELL, Round Pond.

### California

*To Camp Bowie*, Fort Worth, Texas, for duty, from Camp Kearney, Capts. J. H. FRANKLIN, Guadalupe; R. HAGAN, Los Angeles; from Western Department, Capts. S. M. ALTER, Los Angeles; E. H. JORDAN, Tecate; Lieut. O. W. BUTLER, Los Angeles.

*To Camp Crane*, Allentown, Pa., for duty, from Camp Kearney, Capt. W. P. MILLIKEN, Oakland; from Camp Travis, Capt. S. Y. VAN METER, Los Angeles.

*To Camp Dodge*, Des Moines, Ia., for duty, from Western Department, Lieuts. F. M. WHITING, Oroville; P. K. JACKSON, San Luis Obispo.

*To Camp Fremont*, Palo Alto, Calif., base hospital, Capts. R. W. O'BANNON, Hollister; W. E. McLAUGHLIN, Los Angeles; B. F. MILLER, Whittier; Lieuts. C. D. SWEET, Fresno; E. E. ENDICOTT, Jackson; E. PURCELL, Oakland. For duty, from Western Department, Majors J. A. PARKS, San Diego; W. R. P. CLARK, San Francisco; Capts. O. O. YOUNG, Garden Grove; J. E. FAHY, Los Angeles; H. A. HOIT, Pasadena.

*To Camp Grant*, Rockford, Ill., for duty, from Fort Riley, Capt. W. V. CHALMERS-FRANCIS, Los Angeles.

*To Camp Hancock*, Augusta, Ga., base hospital, from Army Medical School, Lieut. F. E. HERZER, Loma Linda.

*To Camp Kearney*, Linda Vista, Calif., base hospital, Capts. J. H. PETTIS, Fresno; A. W. TEEL, Glendale; C. E. CURDTS, Oakland; H. A. FISKE, Pasadena; Lieuts. B. W. JOHNSON, Dos Palos; E. H. HALL, Los Angeles; R. G. VAN NUYS, Piedmont; W. T. McNEIL, Tracy. For duty, from Portland, Ore., Lieut. J. THORNTON, Los Angeles.

*To Camp Lewis*, American Lake, Wash., base hospital, Capts. A. A. ATKINSON, Dorris; C. O. MITCHELL, Fresno; M. L. LOOMIS, Los Angeles; N. C. BISSELL, Modesto; J. K. SWINDT, Pomona; Lieut. C. WAYLAND, Watsonville; from San Francisco, Capt. E. N. GREENWOOD, San Francisco.

*To Camp Logan*, Houston, Texas, base hospital, from Camp Kearney, Lieut. W. D. BISHOP, Sawtelle.

*To Camp MacArthur*, Waco, Texas, base hospital, from Fort Riley, Major B. F. ALDEN, San Francisco. For duty, from Camp Kearney, Capt. C. P. CONROY, Los Angeles; from Fort Oglethorpe, Lieut. G. T. WILHELM, Porterville; from Western Department, Lieut. G. M. DUNNE, San Francisco.

*To Camp Meade*, Admiral, Md., base hospital, from New York, Lieut. F. B. WEST, Los Angeles.

*To Camp Pike*, Little Rock, Ark., base hospital, from Camp Kearney, Capt. J. A. BALSLEY, Santa Monica; from Fort Logan H. Roots, Lieut. J. L. MILLER, Jr., Los Angeles; from San Francisco, Major W. C. CHIDESTER, San Mateo. For duty, from Western Department, Capt. J. A. JACKSON, San Diego.

*To Camp Sherman*, Chillicothe, Ohio, base hospital, from New York, Lieut. B. Y. MILLER, San Luis Obispo.

*To Camp Travis*, Fort Sam Houston, Texas, base hospital, from Fort Sam Houston, Lieut. J. H. SCHAEFER, Los Angeles.

*To Camp Upton, L. I., N. Y.*, base hospital, from New Haven, Major C. J. HARBECK, Hayward.

*To Camp Wheeler*, Macon, Ga., base hospital, from New York, Lieut. C. M. MILLER, Oakley.

*To Fort McHenry, Md.*, base hospital, from Camp Zachary Taylor, Lieut. J. C. IRWIN, Los Angeles; from New York, Lieut. J. SAYLIN, El Monte.

*To Fort Oglethorpe* for instruction, Capt. H. M. GRIFFITH, Pasadena; Lieut. D. E. SHEA, Los Angeles.

*To Fort Ontario, N. Y.*, base hospital, from Camp Cody, Capt. L. L. RIGGIN, Pasadena.

*To Fort Riley* for instruction, Capts. J. V. BROWN, Glendale; M. CAMPBELL, D. W. SKEEL, Los Angeles; J. U. HALL, San Jose; R. B. DEMPSEY, Vallejo; B. PALMER, Venice; L. GRAHAM, Wagner; Lieuts. R. N. BRAMHALL, Fair Oaks; A. E. SKEENBERG, Fresno; F. C. SWEARINGEN, Pomona; V. A. MULLER, San Francisco; from Camp Fremont, Capt. J. T. FISHER, Los Angeles.

*To Lee Hall, Va.*, for duty, from Camp Greene, Lieut. W. B. THOMPSON, San Francisco.

*To New Haven, Conn.*, Yale Army Laboratory School, for duty, from Philadelphia, Major F. P. GAY, Berkeley.

To Rochester, Minn., Mayo Clinic, for instruction, and on completion *to Camp Grant*, Rockford, Ill., base hospital, Capt. C. A. JOHNSON, Los Angeles.

*To San Francisco, Calif.*, for instruction, and on completion *to his proper station*, from Camp Kearney, Capts. H. L. THORPE, Los Angeles; P. M. SAVAGE, San Bernardino; Lieut. E. EAMES, San Francisco; from Camp Lewis, Lieut. W. T. ROTHWELL, Los Angeles. *To Letterman General Hospital*, for duty, Capt. F. K. COLLINS, Hollywood; Lieut. ROSCOE A. WHIFFEN, San Jose.

*To report to the commanding general*, Western Department, for assignment to duty, Major H. C. MOFFITT, San Francisco; Capts. C. A. TILLOTSON, Dinuba; F. W. HANFORD, Los Angeles.

*To the inactive list*, from Fort McHenry, Capt. L. W. ELY, San Francisco.

*Honorably discharged*, Capt. L. DEVILLE, San Diego.

*Resignation of* Lieut. V. H. PODSTATA, Livermore, accepted.

### Canal Zone

*To Newport News, Va.*, for duty, from Fort Oglethorpe, Lieut. B. M. M. PHELPS, Ancon.

### Colorado

*To Camp Crane*, Allentown, Pa., for duty, from Fort Bliss, Lieut. C. R. FULLER, Salida.

*To Camp Grant*, Rockford, Ill., base hospital, Capt. J. H. WOODBRIDGE, Pueblo. For duty, from Fort Riley, Lieut. A. E. GILL, Sopris.

*To Camp Logan*, Houston, Texas, base hospital, from Army Medical School, Lieut. R. A. PAINE, Denver; from Camp Devens, Lieut. W. A. McGUGAN, Denver.

*To Camp Pike*, Little Rock, Ark., for duty, from Fort Riley, Lieut. O. A. DUNCAN, Crawford.

*To Fort Des Moines, Iowa*, base hospital, from Camp Custer, Lieut. F. H. CARPENTER, Denver.

*To Fort Oglethorpe*, base hospital, from New York, Lieut. W. C. HOTCHKISS, Brighton. For instruction, Capt. W. A. KICKLAND, Fort Collins; Lieut. P. B. WALLACE, Eagle.

*To Fort Riley* for instruction, Capts. H. J. HOLLISON, C. G. McEACHERN, Denver; F. H. HARRISON, Gilman; B. B. BLOTZ, Rocky Ford; Lieuts. W. G. BENAWA, Fort Morgan; J. H. McKNIGHT, Haxtum.

*To Hoboken, N. J.*, base hospital, from Camp Crane, Capt. L. M. VAN METER, Lieut. R. W. JOHNSON, Denver.

*To Mineola, L. I., N. Y.*, for instruction, from Camp Lewis, Capt. F. L. DENNIS, Colorado Springs.

*To Newport News, Va.*, for duty, from Fort Oglethorpe, Lieut. R. SCHACHET, Denver.

*To Otisville, N. Y.*, for duty, from New Haven, Capt. W. P. HARLOW, Boulder.

*To report to the commanding general*, Central Department, for assignment to duty, Capt. T. C. TAYLOR, Fort Collins.

*To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Dodge, Capt. J. R. ESPEY, Trinidad.

*To San Francisco, Calif.*, for instruction, and on completion *to his proper station*, from Camp Lewis, Capt. A. W. METCALF, Jr., Henderson.

## Connecticut

*To Camp A. A. Humphreys*, Accotink, Va., for duty, from Eastern Department, Lieut. J. F. SAGARINO, Hartford.

*To Camp Crane*, Allentown, Pa., for duty, from Camp Jackson, Lieut. R. A. RICHARDSON, Bristol.

*To Camp Devens*, Ayer, Mass., base hospital, from Capt May, Capt. A. A. CRANE, Waterbury.

*To Camp Jackson*, Columbia, S. C., base hospital, from Walter Reed General Hospital, Lieut. M. CLIMAN, Hartford.

*To Camp Meade*, Admiral, Md., base hospital, from New Haven, Capt. E. M. BLAKE, New Haven.

*To Camp Pike*, Little Rock, Ark., for duty, from Camp Shelby, Capt. R. D. ROLLER, Jr., Bridgeport.

*To Camp Sheridan*, Montgomery, Ala., with the board examining the troops for cardiovascular diseases, from Camp Wheeler, Capt. R. S. STARR, Hartford.

*To Camp Travis*, Fort Sam Houston, Texas, base hospital, from Fort Sam Houston, Capt. C. J. LEVERTY, Bridgeport.

*To Camp Upton, L. I., N. Y.*, base hospital, from Camp MacArthur, Lieut. E. L. DOUGLASS, Groton.

*To Camp Wheeler*, Macon, Ga., base hospital, from Camp Gordon, Lieut. J. C. O'CONNELL, Bridgeport.

*To Fort Oglethorpe* for instruction, Lieuts. C. N. WOODFORD, Nangatuck; T. J. SULLIVAN, New Haven; E. L. SMITH, Waterbury; J. A. MAXWELL, Winsted.

*To Fort Ontario, N. Y.*, base hospital, from Camp Upton, Lieut. E. J. WHALEN, Hartford.

*To Hoboken, N. J.*, for duty, from New York City, Lieuts. H. G. JARVIS, Hartford; R. B. STREET, Suffield.

*To New Haven, Conn.*, Yale Army Laboratory School, for instruction, Lieut. H. R. MULLER, Darien.

*To report to the commanding general*, Northeastern Department, for assignment to duty, Lieut. H. D. MOORE, Danbury.

*To Rockefeller Institute* for instruction in the treatment of infected wounds, and on completion *to his proper station*, from Camp Lee, Capt. J. B. SULLIVAN, New Haven.

*To Walter Reed General Hospital*, Takoma Park, D. C., for duty, Lieut. S. MAISLEN, Hartford; from Mineola, Capt. A. E. BRIDES, New Haven.

*To Washington, D. C.*, for duty in the Surgeon-General's Office, from Camp Devens, Lieut. W. C. SANDY, Middleton.

The following order has been revoked: *To Fort Oglethorpe* for instruction, Lieut. L. G. BEARDSLEY, Bridgeport.

## District of Columbia

*To Army Medical School* for duty, Lieut. B. M. PUCKETT, Washington.

*To Camp A. A. Humphreys*, Accotink, Va., for duty, from Fort Myer, Capt. W. A. FRANKLAND, Washington.

*To Camp Bowie*, Fort Worth, Texas, base hospital, from Camp Meade, Capt. W. VAN SWERINGEN, Washington.

*To Camp McClellan*, Anniston, Ala., base hospital, from Camp Wadsworth, Lieut. L. C. ROSENBURG, Washington.

*To Camp Meade*, Admiral, Md., for duty, from Fort Oglethorpe, Capt. S. N. MOSKOWITZ, Washington.

*To Lakewood, N. J.*, for duty, Lieut. F. D. ADAMS, Washington.

*To Plattsburg Barracks, N. Y.*, for duty, Capt. V. T. MOORE, Brookland; from New York, Lieut. D. G. DICKERSON, Washington.

*To Rockefeller Institute* for instruction in the treatment of infected wounds, and on completion *to his proper station*, from Washington, Major T. E. NEILL, Washington.

*To South Baltimore, Md.*, for duty, from Camp Meade, Capt. W. O. WETMORE, Washington.

*To Walter Reed General Hospital*, Takoma Park, D. C. for duty, from Army Medical School, Lieuts. H. F. DUNN, L. NEUMAN, Washington.

## Florida

*To Camp A. A. Humphreys*, Accotink, Va., for duty, from Southeastern Department, Capt. R. C. HUBBARD, Bushnell.

*To Camp Bowie*, Fort Worth, Texas, base hospital, from Camp Joseph E. Johnston, Major H. A. PEYTON, Jacksonville.

*To Camp MacArthur*, Waco, Texas, for duty, from Southeastern Department, Capt. J. Y. PORTER, Key West Barracks.

*To Camp Sherman*, Chillicothe, Ohio, base hospital, from Camp Gordon, Capt. A. B. PARROTT, Jacksonville.

*To Camp Upton, L. I., N. Y.*, for duty from Southeastern Department, Capt. E. LONG, Madison.

*To Fort McHenry, Md.*, base hospital, from Camp Gordon, Capt. A. H. FREEMAN, Starke.

*To Fort Oglethorpe* for instruction, Lieuts. E. R. ACKLEY, Bartow; W. H. SPIERS, Chattahooche; from duty as a private, Lieuts. I. E. MARTIN, Fort Ogden; G. F. HIGHSMITH, Nocatee.

*To Fort Ontario, N. Y.*, base hospital, from Fort Oglethorpe, Lieut. I. E. MARTIN, Fort Ogden.

## Georgia

*To Camp Crane*, Allentown, Pa., for duty, from Camp Gordon, Lieut. C. K. SHARP, Arlington.

*To Camp Custer*, Battle Creek, Mich., for duty, from Camp Dodge, Lieut. W. M. TAPPAN, Augusta.

*To Camp Devens*, Ayer, Mass., base hospital, from Camp Zachary Taylor, Lieut. P. P. LANE, Waycross.

*To Camp Jackson*, Columbia, S. C., base hospital, from Army Medical School, Lieut. E. B. ANDERSON, Atlanta.

*To Camp McClellan*, Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. L. G. PARHAM, Chipley.

*To Camp Pike*, Little Rock, Ark., for duty, from Camp Gordon, T. L. DAVIS, Augusta; Lieut. G. S. BROOKE, Alpharetta.

*To Camp Sheridan*, Montgomery, Ala., base hospital, from Camp Gordon, Capt. J. C. McDOUGALL, Atlanta.

*To Camp Wadsworth*, Spartanburg, S. C., for duty, from Southeastern Department, Lieut. C. J. HIND, Jr., Atlanta.

*To Fort McPherson, Ga.*, for instruction, Lieut. H. G. CARTER, Atlanta.

*To Fort Oglethorpe* for instruction, Capt. J. H. CRAWFORD, Martin; Lieuts. W. J. TURNER, Ashburn; W. A. DEAN, C. L. PEACOCK, Atlanta; C. C. FITTS, Carrolton; W. R. SCHWANSS, Cecil; O. G. McKENZIE, Cordele; W. A. SIBBITT, Douglas; W. A. N. JONES, Gainesville; S. T. B. REVELL, Louisville; J. L. SUMMERLIN, Meigs; C. L. DAVIS, Patterson; A. F. ROUTLEDGE, Rome; D. L. DEAL, Statesboro; from Camp Sevier, Lieut H. B. BRADFORD, Atlanta.

*To Montgomery, Ala.*, for duty, from Camp Greene, Major W. A. JACKSON, Atlanta.

*To New Haven, Conn.*, Yale Army Laboratory School, for instruction, Lieut. E. A. MOODY, Atkinson.

*To Rockefeller Institute* for instruction in bacteriology, and on completion *to Army Medical School*, from Camp Gordon, Lieut. E. R. ANTHONY, Jr., Griffin.

*To Syracuse, N. Y.*, with the board examining the troops for cardiovascular diseases, from Camp Meade, Lieut. V. B. WILLIAMS, Odessadale.

## Hawaii

*To Camp Lee*, Petersburg, Va., for duty, from Fort Oglethorpe, Lieut. V. E. M. OSORIO, Hilo.

## Idaho

*To Mineola, L. I., N. Y.*, for instruction, from Fort Omaha, Major F. H. POOLE, Pocatello.

## Illinois

*To Camp Bowie*, Fort Worth, Texas, for duty, from Camp Dodge, Major H. C. WOLTMAN, Jacksonville; from Western Department, Major P. G. CAPPS, Herrin; Lieut. G. A. TANKERSLEY, Owaneco.

*To Camp Cody*, Deming, N. M., base hospital, Capt. H. A. MILLARD, Minonk.

*To Camp Crane*, Allentown, Pa., for duty, from Camp Beauregard, Lieut. J. A. EASTMAN, La Rose; from Camp Grant, Lieut. C. H. BARTLING, Oak Park.

*To Camp Custer*, Battle Creek, Mich., base hospital, Major C. E. KAHLKE, Chicago. For duty, from Central Department, Major C. H. LOVEWELL, Chicago; from Chicago, Lieut. O. J. SCHOTT, Chicago; from Northeastern Department, Lieut. L. C. SONDEL, Columbia.

*To Camp Devens*, Ayer, Mass., base hospital, Lieut. LEROY H. SLOAN, Chicago.

*To Camp Dodge*, Des Moines, Iowa, for duty, from Camp Perry, Capt. M. A. WIESE, Chicago; from Fort Benjamin Harrison, Capt. M. W. SNELL, Litchfield; from Western Department, Capt. L. M. FIELD, Brownfield.

*To Camp Forrest*, Chickamauga Park, Ga., for duty, from Central Department, Major T. P. FOLEY, Chicago.

*To Camp Fremont*, Palo Alto, Calif., base hospital, from Camp Kearney, Lieut. E. L. CROUCH, Jacksonville.

*To Camp Gordon*, Atlanta, Ga., as orthopedic surgeon, from Fort McPherson, Lieut. C. M. DE BECK, Chicago.

*To Camp Grant*, Rockford, Ill., base hospital, Lieut. A. A. MERTZ, Pawnee. For duty, from Camp Dodge, Lieut. D. O. MEAD, Pinckneyville; from Fort Riley, Capt. F. W. MERRITT, Chicago; Lieut. L. H. GREEN, Johnston City.

*To Camp Greene*, Charlotte, N. C., as orthopedic surgeon, from Fort Oglethorpe Lieut. E. D&W. WISE Champaign.

*To Camp Joseph E. Johnston*, Jacksonville, Fla., base hospital, Capt. E. B. PACKER, Toulon; Lieut. C. P. LAPIN, Chicago.

*To Camp Kearney*, Linda Vista, Calif., for duty, from Fort Oglethorpe, Capt. G. H. MUSSELMAN, Chicago.

*To Camp Lee*, Petersburg, Va., base hospital, from Fort Oglethorpe, Lieut. E. H. W. KUPKE, Chicago.

*To Camp Meade*, Admiral, Md., for duty, from Fort McHenry, Lieut. R. S. SALK, Chicago; from Fort Oglethorpe, Lieuts. W. B. KILTON, Harvel; K. E. MONTGOMERY, Lawrenceville.

*To Camp Pike*, Little Rock, Ark., for duty, Lieut. E. H. WARSZEWSKI, Chicago; from Camp McClellan, Capt. W. T. DOWDALL, East St. Louis; from Camp Travis, Lieut. I. D. KELSHEIMER, Paxton; from Camp Zachary Taylor, Lieut. H. W. BAU, Chicago; from Western Department, Lieut. E. F. TATE, Homer.

*To Camp Sevier*, Greenville, S. C., base hospital, from Fort Oglethorpe, Lieut. C. M. TAYLOR, Decatur.

*To Camp Sheridan*, Montgomery, Ala., base hospital, from Camp Jackson, Lieut. F. A. ANDERSON, Chicago; from Fort Oglethorpe, Lieut. H. McB. GILLIS, Wood River.

*To Camp Sherman*, Chillicothe, Ohio, base hospital, from Camp Dodge, Capt. B. C. SYVERSON, Chicago; from Camp Gordon, Capt. G. M. LOEWE, Chicago; from New York, Capt. C. FORD, Waggoner.

*To Camp Upton, L. I., N. Y.*, base hospital, Capt. A. B. YUDELSON, Chicago. With the board examining the troops for cardiovascular diseases, from Lakewood, Lieut. S. B. LEISER, Chicago.

*To Camp Wadsworth*, Spartanburg, S. C., for duty, from Camp Lee, Lieut. E. E. HOWARD, Rossville; from Fort Oglethorpe, Lieut. W. H. CONSER, Cambridge; from Northeastern Department, Capt. M. L. PUFFER, Downer's Grove.

*To Camp Wheeler*, Macon, Ga., base hospital, from New York, Lieut. L. L. TURNER, Chicago.

*To Camp Zachary Taylor*, Louisville, Ky., base hospital, Lieut. T. V. DAGNAULT, Chicago.

*To Cape May, N. J.*, for duty, Lieut. A. A. LEBEAU, Chicago.

*To Fort Des Moines, Iowa*, base hospital, from Camp Grant, Lieut. W. J. PICKETT, Chicago; from Camp Shelby, Capt. J. H. EVANS, Chicago.

*To Fort McHenry, Md.*, base hospital, from New York, Lieut. P. G. KITTERMAN, Chicago.

*To Fort Oglethorpe* as instructor, from Fort Riley, Capt. D. B. POND, Chicago; Lieut. G. P. GILL, Rockford. For instruction, Capts. G. H. MOORE, Aledo; F. W. JONES, Alton; T. C. HAYS, Canton; F. M. EDWARDS, Centralia; M. T. GOLDSTINE, J. W. HALL, J. LANSKI, H. H. MERRELL, D. C. PHILLIPS, Chicago; J. A. S. HOWELL, Elgin; J. H. LANGSTAFF, Fairburg; J. M. PALMER, Grayslake; R. C. DANFORD, Pana; J. R. ERNST, Peoria; W. R. FRINGER, Rockford; L. OSTROM, Rock Island; C. P. COLBY, C. L. PATTON, W. W. VAN WORMER, Springfield; Lieuts. G. B. LUTYENS, Buffalo; F. L. BROWN, G. GUCA, A. W. HAEFFNER, O. HOLLINGER, S. G. KUBALA, E. W. MOSLEY, A. M. SCHEIER, C. G. SHANNON, R. R. L. STURGES, A. K. SUTCH, L. TABENSKI, W. T. WELCH, J. P. ZALESKI, Chicago; S. NAIKELIS, Cicero; R. W. JOHNSON, Findlay; R. D. LUSTER, H. C. SCHROEDER, Granite City; R. D. DUGAN, Illiopolis; C. D. SNIVELY, Ipava; L. ENOS, Jerseyville; A. H. FAHRNER, Joliet; M. L. DOLLAHAN, Lawrenceville; G. A. KERR, McConnell; W. E. CLAY, Mt. Carroll; A. A. WALKLING, Ottawa; L. C. IVES, E. W. SEABURG, Peoria; F. R. MORGAN, Quincy; A. C. C. WIEBUSCH, Steeleville; from Camp Gordon, Lieut. P. E. GREENLEAF, Bloomington; from Chicago, Lieut. J. MITCHELL, Chicago.

*To Fort Ontario, N. Y.*, base hospital, from Camp Upton, Lieut. F. W. FIEDLER, Batchtown; from Fort McPherson, Capt. A. D. WEST, Moline.

*To Fort Riley* for temporary duty, from Army Medical School, Lieut. J. C. SMALL, Chicago. For instruction, Capts. M. PFEIFFENBERGER, Alton; R. A. ROACH, Chicago; J. H. ELLINGSWORTH, East Moline; E. F. HERDIEN, Martinton; Lieuts. A. A. CALKINS, Chadwick; R. L. BORCHERT, A. G. EVERHART, J. J. LEACH, P. P. O'CONNER, E. L. WRIGHT, Chicago; W. P. CANNON, Kankakee; J. A. JOHNSON, McLeansboro; W. A. SIMMONS, Magnolia; G. D. LOCKIE, D. ZAPHYRIADES, Springfield; H. A. TERRY, Tampico; W. O'REILLY, Winchester.

*To Fort Sill, Okla.*, for duty, from Mineola, Lieut. P. H. ROWE, Chicago.

*To Fort Thomas, Ky.*, for duty, from Camp Greene, Lieut. E. R. HERRMAN, Stanford.

*To Hoboken, N. J.*, for duty, Lieut. H. T. SWANSON, Chicago.

*To New Haven, Conn.*, for duty, Capt. A. T. TRAPP, Springfield; Lieuts. R. W. HARRELL, Chicago; G. K. FENN, Chicago Heights; from Camp Jackson, Capt. T. A. HOGAN, Chicago. *To Yale Army Laboratory School*, for instruction, Lieut. C. S. BOWMAN, Alsey.

*To New York*, Neurological Institute, for instruction, Capt. H. A. BEAM, Moline.

*To report to the commanding general* Central Department, for assignment to duty, Lieut. B. B. DUNN, Perry.

*To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Dodge, Lieut. M. S. COFFLER, Chicago; from Camp Pike, Lieut. J. D. McCULLOUGH, Jr., Aurora.

*To Syracuse, N. Y.*, for duty, from New Haven, Lieut. J. SCHLESINGER, Oak Forest.

*To Walter Reed General Hospital*, Takoma Park, D. C., for duty, from Army Medical School, Lieut. A. L. BEYERLEIN, Chicago; from Camp Cody, Capt. ST. E. M. SALA, Rock Island.

The following orders have been revoked: *To Douglas, Ariz.*, from Fort Riley, Capt. J. A. BORTZ, Nauvoo. *To Fort Oglethorpe* for duty, from Fort Riley, Lieut. K. E. MONTGOMERY, Lawrenceville.

## Indiana

*To Army Medical School* for instruction, from Fort Oglethorpe, Lieut. J. R. YOUNG, Cumberland.

*To Camp Beauregard*, Alexandria, La., for duty, from Camp Travis, Lieut. H. L. COOPER, South Bend.

*To Camp Bowie*, Fort Worth, Texas, base hospital, from Fort Oglethorpe, Capt. D. COHEN, Jeffersonville. For duty, from Western Department, Lieut. T. B. JOHNSON, Jamestown.

*To Camp Custer*, Battle Creek, Mich., base hospital, Capt. G. C. JOHNSON, Evansville; Lieuts. C. H. MEAD, Bluffton; J. A. M. ASPEY, Hope. For duty, from Camp Dodge, Capt. G. H. PENDLETON, Indianapolis. With the board examining the command for nervous and mental diseases, Lieut. P. S. JOHNSON, Sheridan.

*To Camp Dodge*, Des Moines, Iowa, base hospital, Lieut. B. L. CODY, Evansville. For duty, from Fort Benjamin Harrison, Lieut. L. A. SALB, Jasper.

*To Camp Grant*, Rockford, Ill., base hospital, Capt. A. B. MORGAN, LaFayette; Lieuts. V. GORDON, Blountsville; J. F. SWAYNE, Mecca.

*To Camp Greene*, Charlotte, N. C., base hospital, Capt. J. R. YUNG, Terre Haute.

*To Camp Jackson*, Columbia, S. C., base hospital, Capt. W. N. CULMER, Bloomington.

*To Camp Lee*, Petersburg, Va., base hospital, Lieut. J. L. REDDING, Bluffton.

*To Camp MacArthur*, Waco, Texas, base hospital, from Camp Shelby, Lieut. C. V. DAVIDSON, West LaFayette. For duty, Lieut. I. H. SONNE, Corydon.

*To Camp Travis*, Fort Sam Houston, Texas, for duty Lieut. A. A. YOUNG, Hammond.

*To Camp Upton, L. I., N. Y.*, for duty, from Fort Oglethorpe, Lieut. K. C. FITZGERALD, New Harmony.

*To Camp Wheeler*, Macon, Ga., base hospital, from Camp Gordon, Lieut. W. G. THORNE, Columbus; from Camp McClellan, Lieut. H. H. MARTIN, La Porte.

*To Fort Benjamin Harrison, Ind.*, for duty, from Central Department, Lieut. C. J. COOK, Indianapolis.

*To Fort Des Moines, Ia.*, base hospital, from Camp Custer, Capt. J. C. GLACKMAN, Hatfield.

*To Fort McHenry, Md.*, base hospital, from Camp Greene, Lieuts. G. C. PRICE, Judson; J. E. FREED, Terre Haute.

*To Fort Oglethorpe* for duty, from New York City, Lieut. C. A. MARSH, Newcastle. For instruction, Capts. S. C. NORRIS, Anderson; W. R. DAVIDSON, Evansville; J. P. SEALE, Fairmont; I. E. MORRIS, Fort Wayne; B. W. CHIDLAW, Hammond; S. McGAUGHEY, Indianapolis; H. N. SWEZEY, LaFayette; H. J. THOMPSON, La Porte; C. M. DUPUY, Riley; R. D. BLOUNT, Valparaiso; R. V. MURRAY, Zanesville; Lieuts. B. A. KING, Cicero; D. R. GOOD, Greenwood; E. RUPEL, L. H. STAFFORD, Indianapolis; E. M. BENNETT, Jamestown; D. HART, Montgomery; M. L. WAGNER, Peru; J. C. STAFFORD, Plainfield; W. S. COLEMAN, Rushville; J. H. HEWITT, Terre Haute; F. M. RUBY, Union City; C. S. ALBERTSON, Walton.

*To Fort Ontario, N. Y.*, base hospital, from Camp Sheridan, Lieut. F. L. REESE, Bicknell.

*To Fort Riley* for instruction, Capts. R. E. JONES, Clayton; P. O. ENGLERTH, North Judson; S. A. CLARK, South Bend; C. L. ROWLAND, West Point; Lieuts. W. E. BARNES, Evansville; J. M. TITUS, Hebron; J. H. EBERWEIN, L. C. HICKS, H. R. WILLAN, Indianapolis; C. J. BROCKWAY, F. L. PYKE, LaFayette; J. C. ROSS, Marion; M. A. McDOWELL, Peru; A. H. RHODES, Princeton.

*To Lee Hall, Va.*, for duty, from Camp Greene, Lieut. G. W. KIMBALL, La Porte.

*To report to the commanding general*, Central Department, for assignment to duty, Capt. S. R. CLARK, Petersburg.

The following order has been revoked: *To Camp Dodge*, Des Moines, Iowa, for duty, from Fort Benjamin Harrison,, Lieut. C. J. COOK, Indianapolis.

*To Camp Dodge*, Des Moines, Iowa, base hospital, Lieut R. W. WOOD, Newton. For duty from Western Department, Lieut. J. B. OWEN, Central City.

*To Camp Gordon*, Atlanta, Ga., base hospital, Capt. J. B. KEOGH, Dubuque.

*To Camp Grant*, Rockford, Ill., for duty, from Chicago, Lieut. B. C. HAMILTON, Jr., Jefferson.

*To Camp McClellan*, Anniston, Ala., base hospital, from New York, Lieut. B. T. WHITAKER, Boone.

*To Camp Pike*, Little Rock, Ark., for duty, from Camp Travis, Capt. W. A. BATES, Neola.

*To Camp Shelby*, Hattiesburg, Miss., base hospital, from New York, Lieut. W. S. CHESTER, Britt.

*To Camp Sheridan*, Montgomery, Ala., base hospital, from Camp Dix, Major A. R. HOOVER, Des Moines.

*To Camp Sherman*, Chillicothe, Ohio, base hospital, from Camp Zachary Taylor, Lieut. L. B. AMICK, Millersburg.

*To Camp Upton, L. I., N. Y.*, base hospital, from Camp Grant, Lieut. J. E. EDGINGTON, Washington; from Camp Zachary Taylor, Lieut. C. E. MOORE, Newton.

*To Fort Oglethorpe* for instruction, Capts. B. J. CALLAHAN, Livermore; J. D. BROWNSON, Monona; Lieuts. V. H. HASEK, East Cedar Rapids; T. F. E. BESS, Fort Madison; C. E. CHENOWETH, Iowa City; F. L. SECOY, Sioux City.

*To Fort Riley* for instruction, Capts. E. I. WOODBURY, Burlington; N. W. JOHNSON, Cedar Rapids; F. E. CRESSLER, Churdon; A. M. SHERMAN, Clarinda; J. E. KESSELL, Des Moines; C. D. HARLAN, Keswick; H. M. HOAG, Mason City; Lieuts. W. DIVEN, Atlantic; W. F. AMDOR, Carbon; R. J. MATTHEWS, Clarinda; C. C. BOWIE, Dedham; C. A. McGUIRE, Dubuque; W. H. MOTT, Farmington; J. L. CRUZEN, Lacona; C. A. MILLER, Nevinville; E. L. HOLLIS, Rolfe; C. H. GRAENING, Waverly; J. T. CARMODY, Wesley.

*To Fort Sill, Okla.*, for duty, from Camp Greene, Capt. T. L. LONG, Woodward.

*To Fort Thomas, Ky.*, for duty, from Chicago, Capt. A. B. PHILLIPS, Clear Lake.

*To Hoboken, N. J.*, base hospital, from Camp Crane, Lieut. I. J. GIBSON, Fontanelle. For duty, from Camp Crane, Capts. N. McP. WHITEHILL, Boone; E. D. TOMPKINS, Clarion; from Fort Oglethorpe, Lieut. E. P. WEIH, Clinton.

*To New Haven, Conn.*, for duty, Capt. J. T. PADGHAM, Grinnell. *To Yale Army Laboratory School*, for duty, from Fort Leavenworth, Lieut. D. M. NYQUIST, Eldora.

*To report to the commanding general*, Central Department, for assignment to duty, Capts. F. N. MEADE, F. L. VANDERVEER, Cedar Falls; Lieut. H. H. HUNT, Hazleton.

*To Waynesville, N. C.*, for duty, from New Haven, Lieut. M. D. JEWELL, Decorah.

*To Willoughby, Ohio*, for duty, from Camp Sherman, Capt. G. A. PLUMMER, Cresco.

## Kansas

*To Camp Crane*, Allentown, Pa., base hospital, from New York, Lieut. C. E. SHEPPARD, Baldwin City. For duty, from Camp Travis, Lieut. C. E. YATES, Vinland.

*To Camp Grant*, Rockford, Ill., for duty, from Fort Riley, Capt. C. H. KOONTZ, Onaga; Lieut. J. L. PEPPERS, Newton.

*To Camp Jackson*, Columbia, S. C., base hospital, from Camp Crane, Capt. G. I. THACHER, Waterville.

*To Camp Kearney*, Linda Vista, Calif., for duty, from Portland, Ore., Lieut. J. C. McKINNON, Caldwell.

*To Camp Las Casas*, San Juan, P. R., base hospital, from Fort Riley, Major J. D. RIDDELL, Salina.

*To Camp Lee*, Petersburg, Va., base hospital, from New York, Lieut. J. A. H. WEBB, Stafford.

*To Camp McClellan*, Anniston, Ala., for duty, from Camp Upton, Capt. F. T. JOHNSON, Jr., Elmdale.

*To Camp Sherman*, Chillicothe, Ohio, base hospital, from Camp Dix, Lieut. C. W. HALL, Hutchinson.

*To Camp Upton, L. I., N. Y.*, base hospital, from Fort Oglethorpe, Lieut. J. M. MARKS, Valley Falls.

*To Camp Wadsworth*, Spartanburg, S. C., base hospital, from New York, Lieut. F. B. SHELDON, Manhattan.

*To Fort Oglethorpe*, base hospital, from New York, Lieut. E. J. FROST, Wichita. For instruction, Lieut. M. F. RUSSELL, Great Bend.

*To Fort Riley* for instruction, Capts. A. A. SHELLEY, Galena; J. W. NIXON, Girard; G. R. GAGE, Hutchinson; E. A. REEVES, Kansas City; H. G. HUNSBERGER, Mount Hope; C. L. RANDALL, Neodesha; A. E. BILLINGS, Topeka; J. C. CALDWELL, W. M. MARTIN, Wellington; Lieuts. D. PETERSON, Atlanta; W. J. LOWIS, Colby; A. J. TURNER, Garnett; W. S. HUDIBURG, Independence; C. W. LONGENECKER, Kingman; W. B. BURR, Longton; E. C. LIGHTFOOT, Mineral; H. A. VINCENT, Perth; W. V. HARTMAN, Pittsburg; H. T. DAVIDSON, Wichita.

*To New Haven, Conn.*, Yale Army Laboratory School, for instruction, Lieut. T. M. AKNEW, Wichita.

*To report to the commanding general*, Central Department, for assignment to duty, Capt. B. H. JORDAN, Medicine Lodge.

*To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Zachary Taylor, Capt. G. M. GAFFORD, Kinsley.

The following order has been revoked: *To Camp Logan*, Houston, Texas, base hospital, from Camp MacArthur, Lieut. A. B. SCOTT, Bucklin.

### Kentucky

*To Azalea, N. C.*, for duty, from Markleton, Major B. F. VAN METER, Lexington.

*To Camp Beauregard*, Alexandria, La., base hospital, Lieut. D. H. COLEMAN, Harrodsburg.

*To Camp Dodge*, Des Moines, Iowa, for duty, from Central Department, Lieut. W. M. EWING, Cave City.

*To Camp Gordon*, Atlanta, Ga., for duty, from Camp Greene, Lieut. J. M. STAUGHTON, Covington.

*To Camp Lee*, Petersburg, Va., base hospital, Lieut. C. T. WILFONG, Louisville.

*To Camp MacArthur*, Waco, Texas, base hospital, from Fort Riley, Lieut. F. G. AUD, Louisville.

*To Camp Shelby*, Hattiesburg, Miss., base hosptal, from Camp Zachary Taylor, Capt. M. FLEXNER, Louisville; from New York, Capt. V. BLYTHE, Paducah.

*To Camp Sherman*, Chillicothe, Ohio, base hospital, from Camp Zachary Taylor, Lieut. W. H. NEEL, Bowling Green.

*To Fort Oglethorpe* for instruction, Capts J. G. GAITHER, Hopkinsville; F. L. JUETT, J. D. MAGUIRE, Lexington; Lieuts. T. A. PEASE, Bardwell; J. F. DUNCAN, Bowling Green; B. N. COMER, Bradford; W. E. McWILLIAMS, Brodhead; H. F. MANN, Demossville; K. W. WEATHERS, Elkton; G. B. BROWN, Jr., Georgetown; J. W. WHITE, Holland; M. H. MATHEWSIAN, Louisville.

*To Houston, Texas*, Ellington Field, for duty, from Camp MacArthur, Lieut. L. CHAMPION, Cadiz.

*To New Haven, Conn.*, Yale Army Laboratory School, for instruction, from Fort Leavenworth, Lieuts. W. H. COMBS, Kirksville; G. S. BRZOZOWSKI, Louisville.

*To Walter Reed General Hospital*, Takoma Park, D. C., for duty, from Fort McPherson, Lieut. W. G. ECKMAN, Covington.

### Louisiana

*To Camp Bowie*, Fort Worth, Texas, for duty, from Western Department, Capt. S. O. TURNER, DeRidder.

*To Camp Crane*, Allentown, Pa., for duty, from Camp Dix, Lieut. R. J. MAILHES, New Orleans.

*To Camp Dix*, Wrightstown, N. J., for duty, from Camp Crane, Lieut. A. S. COOPER, Mansfield.

*To Camp Dodge*, Des Moines, Iowa, for duty, from Cookeville, Tenn., Capt. W. J. ROBERTS, Colfax.

*To Camp Logan*, Houston, Texas, base hospital, from Camp Beauregard, Lieut. T. T. BATSON, New Orleans.

*To Camp MacArthur*, Waco, Texas, for duty, from Fort Oglethorpe, Lieut. J. R. STAMPER, Caspiana.

*To Camp Shelby*, Hattiesburg, Miss., base hospital, Lieut. S. M. BLACKSHEAR, New Orleans.

*To Camp Sheridan*, Montgomery, Ala., base hospital, from Fort Oglethorpe, Major T. P. LLOYD, Shreveport.

*To Camp Travis*, Fort Sam Houston, Texas, base hospital, from Fort Sam Houston, Major E. MOSS, New Orleans.

*To Camp Wadsworth*, Spartanburg, S. C., for duty, from Southeastern Department, Major R. HUNT, Shreveport.

*To Fort Oglethorpe* for instruction, Capts. L. O. CLARK, Lafayette; D. C. ILES, Lake Charles; Lieuts. F. S. TARLETON, Jeanerette; F. T. FRAZAR, Merryville; R. C. WEBB, Rayne.

*To Fort Sill, Okla.*, for duty, Lieut. J. K. GRIFFITH, Slidell.

*To Hoboken, N. J.*, for duty, from Fort Oglethorpe, Major K. W. NEY, New Orleans.

*To Newport News, Va.*, for duty, from Fort Oglethorpe, Lieuts. W. E. BARKER, W. L. BENDEL, E. J. BERANGER, J. S. STELL, New Orleans

*To Walter Reed General Hospital*, Takoma Park, D. C., for duty, from Army Medical School, Lieut. H. T. SIMON, New Orleans.

The resignation of Capt. C. G. SALLES, Thibodaux, accepted.

### Maine

*To Camp McClellan*, Anniston, Ala., as orthopedic surgeon, from Fort McPherson, Lieut. W. E. CLARKE, Damariscotta Mills.

*To Camp Sheridan*, Montgomery, Ala., base hospital, from Fort Oglethorpe, Capt. H. H. Crane, Bangor.

*To Fort Oglethorpe* for instruction, Capt. L. M. HOWES, Bangor; Lieuts. H. C. BUNDY, Lake View; M. S. KUPELIAN, Portland; A. J. STIMPSON, Waterford.

*To Fort Ontario, N. Y.*, base hospital, from Camp Upton, Capt. H. V. TWEEDIE, Bucksport.

*To Hoboken, N. J.*, base hospital, from Camp Crane, Capt. H. E. E. STEVENS, Lewiston.

*To New Haven, Conn.*, for duty, and on completion to Azalea, N. C., for duty, from Rockefeller Institute, Capt. L. ADAMS, Bangor.

*To Newport News, Va.*, for duty, from Fort Oglethorpe, Lieut. L. W. HADLEY, Union.

### Maryland

*To Baltimore, Md.*, Johns Hopkins, Hospital, as instructor, from New York, Major F. H. BAETJER, Cantonville.

*To Camp Crane*, Allentown, Pa., for duty, from Camp Meade, Capt. T. J. COONAN, Westminster.

*To Camp Gordon*, Atlanta, Ga., base hospital, Capt. H. O. MOSENTHAL, Baltimore.

*To Camp Lee*, Petersburg, Va., for duty, from Fort Oglethorpe, Major, M. L. TODD, Galloways.

*To Camp Meade*, Admiral, Md., base hospital, from Army Medical School, Lieut. L. A. M. KRAUSE, Baltimore. For duty, from Fort Oglethorpe, Lieut. J. KOTZ, Baltimore. To examine the command for nervous and mental diseases, from Fort McHenry, Lieut. F. N. OGDEN, Sykesville. With the board examining the troops for cardiovascular diseases, from Fort McHenry, and from Station, Camp Lee, Capt. A. D. ATKINSON, Baltimore.

*To Camp Shelby*, Hattiesburg, Miss., with the board examining the troops for tuberculosis, from New Haven, Lieut. P. W. CHRISTMAN, Baltimore.

*To Camp Wadsworth*, Spartanburg, S. C., for duty, from Camp Greene, Lieut. V. H. CONDON, Baltimore; from Southeastern Department, Capt. E. D. ELLIS, Baltimore.

*To Fort Oglethorpe* for instruction, Capt. P. WORTH, Hagerstown; Lieuts. C. L. BATES, W. L. DENNY, J. S. FENBY, J. G. HUCK, E. NOVAK, J. E. TALBOTT, Baltimore; F. D. WORTHINGTON, Del Air; G. B. LYNCH, Hillsdale; from Camp Hancock, Lieut. M. RASKIN, Baltimore.

*To Fort Riley* for duty, from Camp Lee, Lieut. T. M. RIVERS, Baltimore.

*To Camp Travis*, Fort Sam Houston, Texas, for duty, from Southern Department, Capt. P. L. DAVIS, Baltimore.

*To Hoboken, N. J.*, for duty, from Fort Oglethorpe, Lieut. M. J. EGAN, Jr., Baltimore.

*To Mineola, L. I., N. Y.*, for instruction, Lieut. F. H. LINTHICUP, Baltimore.

*To Newport News, Va.*, for duty, from Fort Oglethorpe, Lieut. A. B. MORAN, Baltimore.

*To New York*, Neurological Institute, for instruction, Lieuts. J. H. BAIRD, H. A. GAILEY, Baltimore.

*To Plattsburg Barracks, N. Y.*, for duty, from Camp Lee, Lieut. C. A. NEYMANN, Baltimore.

*Honorably discharged* on account of physical disability incurred in line of duty, Major G. WILSON, Baltimore.

The following orders have been revoked: *To Fort Oglethorpe* for instruction, Lieuts. J. H. BAIRD, J. P. SHEARER, Baltimore. *To Walter Reed General Hospital*, Takoma Park, D. C., Lieut. H. M. BANKS, Baltimore.

### Massachusetts

*To Camp Bowie*, Fort Worth, Texas, for duty, from Western Department, Lieut. J. D. SPAULDING, Boston.

*To Camp Crane*, Allentown, Pa., for duty, from Camp Travis, Lieut. G. H. CROFTON, Worcester.

*To Camp Custer*, Battle Creek, Mich., with the board examining the command for nervous and mental diseases, Lieut. J. L. McAUSLAN, Gardner.

*To Camp Devens*, Ayer, Mass., base hospital, Major D. F. JONES, Capt. S. H. BLODGETT, Boston; from Baltimore, Capt. A. W. SELLARDS, Boston. For duty, Lieut. H. B. STEVENS, Boston.

*To Camp Dix*, Wrightstown, N. J., base hospital, Lieut. H. B. McWILLIAMS, Williamstown. For duty, Capt. G. M. ALBEE, Worcester; from Camp Crane, Capt. A. C. SMITH, Brockton.

*To Camp Gordon*, Atlanta, Ga., for duty, from Camp Greene, Capt. W. C. SHEEHY, New Bedford.

*To Camp Greene*, Charlotte, N. C., base hospital, from Williamsbridge, Capt. F. H. LAHEY, Boston.

*To Camp Lee*, Petersburg, Va., base hospital, from Camp Devens, Lieut. A. J. CHOATE, Gloucester. To examine the command for nervous and mental diseases, from Camp Meade, Lieut. M. W. PECK, Marblehead.

*To Camp MacArthur*, Waco, Texas, for duty, from Camp MacArthur, Lieut. W. A. JILLSON, Westborough.

*To Camp Pike*, Little Rock, Ark., for duty, from Camp MacArthur, Lieut. N. M. COHEN, Boston.

*To Camp Sevier*, Greenville, S. C., as camp psychiatrist, from Camp Jackson, Lieut. C. B. PARTINGTON, Framingham.

*To Camp Upton, L. I., N. Y.*, base hospital, Capt. H. R. CLOUDMAN, Brockton; Lieut. J. D SPAULDING, Boston; from Camp Hancock, Lieut. J. H. DOYLE, Fall River. For duty, from Fort Oglethorpe, Lieut. P. A. SHURTLEFF, Blandford.

*To Camp Wadsworth*, Spartanburg, S. C., base hospital, Lieuts. R. H. PHILBRICK, East Northfield; C. T. COBB, Northampton. For duty, from Southeastern Department, Lieut. A. K. YOOSUF, Worcester.

*To Camp Wheeler*, Macon, Ga., base hospital, from Camp Jackson, Capt. M. T. CAVANAUGH, Great Barrington; from Camp McClellan, Lieut. G. C. BERGERON, Springfield.

*To Fort Oglethorpe* for instruction, Capt. G. C. ROBERT, Holyoke; Lieuts. H. V. HYDE, D. S. KING, Boston; J. E. BURNETTE, Brockton; F. L. GIBSON, Holyoke; A. M. O'CONNOR, Housatonic; F. C. ATKINSON, Methuen; T. H. KENNEY, Northampton; E. J. MEYER, Somerville; D. J. BOLAND, J. H. FALVEY, Worcester.

*To Fort Ontario, N. Y.*, base hospital, from Camp Devens, Lieut. E. A. MESERVE, Boston.

*To Hoboken, N. J.*, for duty, Lieuts. G. A. FELCH, Boston; F. H. COFFIN, Haverhill.

*To Lake Charles, La.*, for duty, from Mineola, Lieut. C. H. BIRDSALL, Boston.

*To Mineola, L. I., N. Y.*, for instruction, from Boston, Lieut. H. L. BABCOCK, Boston.

*To New Haven, Conn.*, Yale Army Laboratory School, for instruction, Lieuts. H. W. NEWELL, Boston; F. A. STANWOOD, Wellesley Hills.

*To Newport News*, for duty, from Fort Oglethorpe, Lieut. I. F. ARMSTRONG, Marlboro.

*To New York City*, Bellevue Hospital, for instruction, from Williamsbridge, Capt. T. F. CARROLL, Brookline.

*To Rantoul, Ill.*, Signal Corps Aviation School, for duty, from Mineola, Capt. J. G. JENNINGS, Boston.

*To Rockefeller Institute* for instruction in the treatment of infected wounds, and on completion to their proper stations, from Camp Meade, Lieut. H. E. MAYNARD, Winchester; from Camp Wheeler, Lieut. J. H. COOK, Quincy.

*To Syracuse, N. Y.*, as orthopedic surgeon, from Fort McPherson, Lieut. K. JOHNSON, Pittsfield.

*To Walter Reed General Hosptal*, Takoma Park, D. C., for observation and treatment, from Camp Travis, Major E. B. Bigelow, Worcester.

*To Washington, D. C.*, for duty, from New York, Major P. BROWN, Boston.

*Resignation of* Capt. H. MOORE, Newton, accepted.

### Michigan

*To Camp Bowie*, Fort Worth, Texas, for duty, from Western Department, Capt. T. S. CROSBY, Wakefield.

*To Camp Crane*, Allentown, Pa., for duty, from Camp Lee, Capt. K. F. MAXEY, Detroit.

*To Camp Dix*, Wrightstown, N. J., with the board examining the troops for cardiovascular diseases, from Lakewood, Lieut. B. A. O'HARA, Detroit.

*To Camp Dodge*, Des Moines, Iowa, base hospital, Capt. R. D. McCLURE, Detroit. For duty, from Camp Perry, Lieut. G. G. ALWAY, Whitmore Lake.

*To Camp Forrest*, Chickamauga Park, Ga., for duty, from Camp A. A. Humphreys, Lieut. H. L. HURLEY, Jackson.

*To Camp Grant*, Rockford, Ill., base hospital, Lieut. A. C. McPHERSON, Grand Rapids.

*To Camp Kearney*, Linda Vista, Calif., for duty, from Portland, Ore., Lieut. H. B. McCRORY, Birch Run.

*To Camp Meade*, Admiral, Md., base hospital, from New York, Lieut. Z. L. KAMINSKI, Detroit.

*To Camp Pike*, Little Rock, Ark., for duty, from Camp Hancock, Lieut. I. S. GELLERT, Detroit; from Camp Sheridan, Lieut. O.

ROAN, Grand Rapids; from Western Department, Lieut. J. W. HAWKINS, Detroit. With the board examining the troops for cardiovascular diseases, Lieut. L. T. CRANE, Detroit.

*To Camp Raritan,* Metuchen, N. J., as orthopedic surgeon, from Fort McPherson, Capt. L. A. FARNHAM, Pontiac.

*To Camp Upton, L. I., N. Y.,* base hospital, from Camp Devens, Capt. M. KOLLIG, Saginaw; from Fort Oglethorpe, Lieuts. R. R. MILLER, Harbor Springs; W. L. MACCANI, Ironwood.

*To Camp Wadsworth,* Spartanburg, S. C., for duty, from Fort Oglethorpe, Capt. J. HOUSTON, Swartz Creek.

*To Camp Wheeler,* Macon, Ga., base hospital, from Camp Sheridan, Capt. F. C. KINSEY, Grand Rapids.

*To Fort Leavenworth, Kan.,* for duty, from Fort Porter, Capt. H. E. SAFFORD, Detroit.

*To Fort Oglethorpe* as instructor, from Fort Riley, Capt. H. S. COLE, Whitehall. For instruction, Capts. H. E. McLENNAN, Bellevue; H. H. MERRIMAN, Deckerville; A. D. McALPINE, F. T. F. STEPHENSON, Detroit; J. G. MANWARING, Flint; F. A. BOOT, J. F. X. GENDRON, Grand Rapids; CLARENCE L. HATHAWAY, Orion; Lieuts. C. W. SELLERS, Akron; S. L. BALLARD, Bay City; R. E. VAN DUSEN, Breckenridge; H. L. CHARLES, Calumet; L. E. BOVIK, Crystal Falls; A. H. LANGE, E. J. LYNCH, Detroit; L. A. LEWIS, Manistee; F. N. MORFORD, Muskegon.

*To Hoboken, N. J.,* base hospital, from Fort Oglethorpe, Lieuts. M. M. HYMAN, Detroit; D. C. EISELE, Gwinn.

*To Mineola, L. I., N. Y.,* for duty, from Fort Oglethorpe, Capt. M. J. SCHWANZ, Detroit.

*To New Haven, Conn.,* for duty, from Fort Sam Houston, Capt. H. B. HARKNESS, Houghton.

*To report to the commanding general,* Central Department, for assignment to duty, Lieut. A. N. HOWE, Boyne Falls.

*To Rochester, Minn.,* Mayo Clinic, for instruction, and on completion *to his proper station,* from Camp Custer, Capt. S. VAN BARMAN, Coloma.

*To San Francisco, Calif.,* for instruction, and on completion *to his proper station,* from Camp Kearney, Lieut. W. G. JENKINS, Newberry.

*To Syracuse, N. Y.,* as orthopedic surgeon, from Fort McPherson, Lieut. H. R. LEIBINGER, Detroit.

*To Washington, D. C.,* for duty in the Surgeon-General's Office, Capt. J. H. HATHAWAY, Highland Park.

*To the inactive list,* from Walter Reed General Hospital, Major U. J. WILE, Ann Arbor.

*Honorably discharged,* Capt. L. BARTH, Grand Rapids; Lieut. G. W. WILSON, Detroit. On account of physical disability existing prior to entrance into the service, Capt. B. T. GOODFELLOW, Cleo; Lieut. G. L. KOESSLER, Detroit.

*Resignation of* Major M. R. SUTTON, Flint, accepted.

The following order has been revoked: *To Douglas, Ariz.,* for duty, from Fort Riley, Lieut. H. C. HACKMAN, Flint.

## Minnesota

*To Army Medical School* as orthopedic surgeon, from New York, Lieut. P. BLANCO, Rochester. For instruction, and on completion *to Fort Oglethorpe* for instruction, from Chicago, Lieut. B. T. BOTTELFSON, Halstead.

*To Camp A. A. Humphreys,* Accotink, Va., as orthopedic surgeon, from Chicago, Lieut. W. H. HALLORAN, St. Paul.

*To Camp Bowie,* Fort Worth, Texas, base hospital, from Camp Wadsworth, Capt. W. F. PLUMLEY, Rochester.

*To Camp Custer,* Battle Creek, Mich., for duty, from Camp Dodge, Lieut. M. C. PIPER, Sanborn.

*To Camp Devens,* Ayer, Mass., base hospital, Lieut. O. A. GROEBNER, Minneapolis; from New York, Lieut. J. B. CLAIR, Winstead.

*To Camp Dodge,* Des Moines, Iowa, base hospital, Capt. T. T. MANN, Minneapolis.

*To Camp Gordon,* Atlanta, Ga., as orthopedic surgeon, from Fort Riley, Lieut. O. L. WINTER, St. Paul.

*To Camp Grant,* Rockford, Ill., for duty, from Camp Dodge, Lieut. D. F. McCANN, Bemidji.

*To Camp Kearney,* Linda Vista, Calif., for duty, from Portland, Ore., Lieut. N. P. ANDERSON, Dunnell.

*To Camp Lee,* Petersburg, Va., as orthopedic surgeon, from Fort Oglethorpe, Lieut. G. B. LYNCH, Winona.

*To Camp Pike,* Little Rock, Ark., for duty, from Fort Oglethorpe, Lieut. R. S. FORBES, Duluth.

*To Camp Travis,* Fort Sam Houston, Texas, with the board examining the troops for tuberculosis, Lieut. J. F. TRAXLER, Henderson.

*To Fort Des Moines, Iowa,* base hospital, from Camp Grant, Capt. I. R. MAERCKLEIN, Renville.

*To Fort McPherson, Ga.,* for duty, from Washington, Major W. M. CHOWNING, Minneapolis.

*To Fort Oglethorpe,* base hospital, from New York, Lieut. C. SANSING, Duluth. For instruction, Major A. R. COLVIN, St. Paul; Capts. A. MACLAREN, St. Paul; C. A. LESTER, Winona; Lieuts. G. McCREIGHT, J. R. NANNESTAD, Albert Lea; G. W. DAHLQUIST, Lancaster; F. L. GILLES, E. G. GILLMORE, Minneapolis; C. C. HOKE, Rochester; C. E. KRUGMEIER, St. Paul; A. W. DREW, Swanville.

*To Fort Riley* for duty, from Hoboken, Capt. F. G. BLAKE, Minneapolis. For instruction, Capts. J. P. FREEMAN, Glenville; C. C. WALKER, Lamberton; C. L. WARREN, Le Roy; J. V. JOHNSON, New Duluth; M. J. KERN, St. Cloud; Lieuts. E. W. ARNOLD, Adrian; F. W. DAVIS, Alden; H. J. SHELVER, Appleton; G. J. DIERKES, Foley; D. A. MACDONALD, G. L. MERKERT, Minneapolis; F. J. SCHATZ, Rosemount.

*To Hoboken, N. J.,* base hospital, from Camp Upton, Lieut. L. H. REDELINGS, Rochester; from Fort Oglethorpe, Lieut. B. N. SOROSE, Detroit.

*To New Haven, Conn.,* for duty, Capt. J. M. CONROY, Nopeming.

*To report to the commanding general,* Central Department, for assignment to duty, Capt. I. McC. ROADMAN, Canmia.

## Mississippi

*To Camp A. A. Humphreys,* Accotink, Va., for duty, from Eastern Department, Lieut. J. G. ARCHER, Jr., Greenville.

*To Camp Crane,* Allentown, Pa., for duty, from Camp Beauregard, Lieut. A. L. LEWIS, Natchez.

*To Camp McClellan,* Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. W. C. NORRIS, De Sota.

*To Fort Des Moines, Iowa,* base hospital, from Camp Shelby, Major W. W. CRAWFORD, Hattiesburg.

*To Fort Oglethorpe* for instruction, Capts. O. N. ARRINGTON, Brookhaven; H. R. MILLER, Lamont; Lieuts. M. E. BRIDGES, Bobo; A. D. CHESTER, Cruger; J. B. HIRSCH, Greenville; J. P. WIGGINS, Merigold; C. P. PITTMAN, Ruleville; D. T. SAYLE, Torrance; C. J. EDWARDS, Vicksburg.

*To Fort Ontario, N. Y.,* base hospital, from Camp McClellan, Lieut. J. S. ADAMS, DeKalb.

*To Hoboken, N. J.,* base hospital, from Fort Oglethorpe, Capt. J. C. McNAIR, Fayette; Lieut. J. L. WHITE, Pinola.

*To Lakewood, N. J.,* for duty, Lieut. R. L. BEADLES, Coffeeville.

*To Newport News, Va.,* for duty, from Camp Sevier, Lieut. R. L. PEYTON, Jackson.

*To Rochester, Minn.,* Mayo Clinic, for instruction, and on completion to *his proper station,* from Camp Sherman, Capt. J. C. ARMSTRONG, Water Valley.

*Resignation of* Lieut. F. S. HILL, Grenada, accepted.

The following order has been revoked: *To Hoboken, N. J.,* base hospital, from Camp Sevier, Lieut. K. T. KLEIN, Meridian.

## Missouri

*To Camp Beauregard,* Alexandria, La., for duty, from Camp Travis, Lieut. H. C. BRASHEAR, St. Louis.

*To Camp Bowie,* Fort Worth, Tex., base hospital, from Fort Oglethorpe, Lieut. C. D. MENEFEE, Perry; from Fort Sill, Lieut. W. E. WEST, Trenton.

*To Camp Custer,* Battle Creek, Mich., base hospital, Major J. R. CLEMENS, Clayton.

*To Camp Dodge,* Des Moines, Ia., Base hospital, Lieut. J. L. SWARTS, St. Louis; from Cape May, Lieut. C. B. HUDSON, Montgomery City.

*To Camp Logan,* Fort Sam Houston, Tex., base hospital, from Camp Travis, Lieut. G. DAHMS, St. Louis.

*To Camp MacArthur,* Waco, Texas, base hospital Lieut. J. L. OWENS, Kansas City.

*To Camp Meade,* Admiral, Md., base hospital, from Fort McHenry, Lieut. H. K. WALLACE, St. Joseph.

*To Camp Perry,* Ohio, for duty, from Fort Leavenworth, Major F. W. SHAW, Mt. Vernon.

*To Camp Pike,* Little Rock, Ark., for duty, from Camp Travis, Lieut. R. B. PLATT, Kansas City; from Fort Riley, Lieut. B. H. EMERSON, Stockton. To examine the command for nervous and mental diseases, Capt. M. L. UNDERWOOD, St. Joseph.

*To Camp Shelby,* Hattiesburg, Miss., with the board examining the troops for tuberculosis, from New Haven, Lieut. H. S. THOMAS, Kansas City.

*To Camp Sheridan,* Montgomery, Ala., base hospital, Capt. M. W. JACOBS, St. Louis.

*To Camp Sherman,* Chillicothe, Ohio, base hospital, Capt. S. B. WESTLAKE, St. Louis; from Camp Gordon, Lieut. E. D. McCARTY, St. Louis.

*To Camp Zachary Taylor,* Louisville, Ky., base hospital, Capt. J. M. DEAN, St. Louis.

*To Fort Constitution,* N. M., for duty, from Camp Dodge, Capt. E. F. COOK, St. Joseph.

*To Fort Des Moines,* Ia., base hospital, from Fort Riley, Capt. J. G. CALHOUN, St. Louis.

*To Fort McHenry,* Md., base hospital, from Camp Greene, Major R. BURNS, Jr., St. Louis.

*To Fort Oglethorpe,* as instructor, from Fort Riley, Capt. D. E. SCHMALHORST, St. Louis. Base hospital, from New York, Lieut. E. R. DEWEESE, Kansas City. For duty, from Fort Riley, Lieut. J. G. MONTGOMERY, Kansas City; from New York, Capt. L. O. NICKELL, Macon; Lieut. W. C. VERNON, Kansas City. For instruction, Capts. J. R. GREEN, Independence; L. C. LEWIS, J. S. LICHTENBERG, J. L. MYERS, W. A. SHELTON, Kansas City; E. H. BRADLEY, Springfield; H. E. HAPPEL, W. F. McNARY, St. Louis; Lieuts. G. G. BRAGG, Huntsville; G. A. SCHNEIDER, Island Falls; A. M. GREGG, Joplin; J. D. BOEHM, Monett; P. A. BRISKEY, W. J. SPARHAWK, St. Louis.

*To Fort Riley* for duty, from St. Louis, Major E. L. OPIE, St. Louis. For instruction, Capts. M. L. PETERS, Cameron; J. F. GRACE, Excelsior Springs; A. C. KNOX, Independence; C. C. PRICE, Kansas City; W. G. JONES, Lincoln; P. SCHUCH, St. Louis; J. G. McDONALD, Urich; Lieuts. J. G. TURLEY, Desloge; E. D. JAMES, Joplin; O. P. McCARTNEY, L. P. McKEEHAN, Kansas City; C. A. ORR, Mendon; D. PIERCE, Newark; J. B. WILLIS, Pattensburg; C. A. TUCKER, Springfield; S. F. ABRAMS, E. A. BURST, C. T. EBER, D. L. GOLDBERG, H. T. RANDLE, S. S. STEWART, J. B. STOKES, St. Louis; C. E. BENHAM, Tarkio; G. W. CARPENTER, Utica.

*To Fort Sill,* Okla., base hospital, Capt. HERLUF C. LUND, St. Louis; Lieut. T. E. CHAPMAN, Joplin.

*To Hoboken, N. J.,* for duty, from Camp Crane, Major W. E. LEIGHTON, St. Louis; from New York, Lieut. S. F. WENNERMANN, St. Louis.

*To New Haven, Conn.,* for duty, Lieut. J. L. MARDER, St. Louis. Yale Army Laboratory School, for instruction, Lieut. G. C. RODEBAUGH, Springfield; from Army Medical School, Capt. P. G. HURFORD, St. Louis.

*To report to the commanding general,* Central Department, for assignment to duty, Capt. A. H. HAMEL, St. Louis; Lieut. F. E. DeHONEY, Fredericktown.

*To Rochester, Minn.,* Mayo Clinic, for instruction, and on completion to his proper station, from Fort Riley, Lieut. G. W. SMITH, Kansas City.

*To Sacramento, Calif.,* Mather Field, for duty, from Portland, Capt. N. W. SHARPE, St. Louis.

*To Washington, D. C.,* for duty in the Surgeon-General's Office, from Waco, Capt. D. T. JOSEPH, St. Louis.

*Honorably discharged,* Capt. W. L. KENNEY, St. Joseph. On account of physical disability existing prior to entrance into the service, Lieut. G. H. TARR, Poplar Bluff.

## Montana

*To Camp Lewis,* American Lake, Wash., base hospital, Capt. T. W. WELSH, Roundup; Lieut. L. P. GAERTNER, Three Forks.

*To Camp MacArthur,* Waco, Texas, for duty, from Western Department, Lieut. W. O. UNGHERINI, Butte.

*To Fort Oglethorpe,* as instructor, from Fort Riley, Capt. A. L. WARD, Havre. For instruction, Capt. T. B. MARQUIS, Livingston.

*To Fort Riley* for instruction, Capts. R. E. SEITZ, Bozeman; A. N. CURRIE, Nashua; Lieuts. J. E. STUART, Livingston; F. LACKNER, C. T. PIGOT, Roundup.

*To New Haven, Conn.,* Yale Laboratory School, for duty, from Fort Riley, Lieut. J. D. HOBSON, Missoula.

### Nebraska

*To Camp Custer,* Battle Creek, Mich., for duty, from Chicago, Capt. F. L. FRINK, Newman Grove.

*To Camp Gordon,* Atlanta, Ga., base hospital, Capt. E. O. WEBER, Wahoo, Neb.

*To Camp Grant,* Rockford, Ill., for duty, from Fort Riley, Capt. F. D. BURGESS, Cedar Rapids.

*To Camp Lee,* Petersburg, Va., base hospital, from Camp Dodge, Lieut. T. E. ATKINSON, Mullen.

*To Camp Meade,* Admiral, Md., base hospital, Capt. A. E. BUCHANAN, Freemont.

*To Camp Pike,* Little Rock, Ark., for duty, from Camp Travis, Lieut. R. E. ROCHE, Sidney.

*To Camp Sheridan,* Montgomery, Ala., with the board examining the troops for tuberculosis, from Fort Riley, Lieut. E. O. WILSON, Madison.

*To Camp Sevier,* Greenville, S. C., base hospital, from New York, Lieut. E. W. FETTER, North Platte.

*To Cape May, N. J.,* for duty, from New York, Major E. C. HENRY, Omaha.

*To Fort Keogh,* Mont., for duty, from Portland, Ore., Lieut. W. E. DOANE, North Bend.

*To Fort Oglethorpe,* as instructor, from Fort Riley, Lieut. F. A. WILMOT, Bertram. For instruction, Capts. I. W. HAUGHEY, Aurora; L. C. BLEICK, W. P. HANEY, Omaha; Lieuts. A. J. BOREN, Hastings; E. C. SAGE, Omaha.

*To Fort Riley,* for duty from Camp Dodge, Major W. J. REDFIELD, Grand Island. For instruction, Capt. E. E. RIDER, Bertrand; Lieuts. F. N. TOWNLEY, Kenesaw; J. J. FOSSLER, Millard; W. P. HYNES, Potter.

*To Hoboken, N. J.,* base hospital, Capt. G. H. WALKER, Lincoln.

*To New Haven, Conn.,* for duty, Lieut. G. S. REEDER, Fremont. Yale Army Laboratory School, for duty, Lieut. W. A. DANIELSON, Osceola.

*To Picron, Ark.,* for duty, from Southern Department, Capt. J. M. WOODARD, Lincoln.

To report to the commanding general, Central Department, for assignment to duty, Lieut. A. H. ISSAKIAN, Niobrara.

*To Rochester, Minn.,* Mayo Clinic, for instruction, and on completion *to his proper station,* from Camp Pike, Capt. H. A. JOHNSON, Tekamoh.

*To San Francisco, Calif.,* for instruction, and on completion *to his proper station,* from Camp Cody, Lieut. H. J. JENKINS, Omaha.

The following order has been revoked: *To Douglas, Ariz.,* for duty, from Fort Riley, Lieut. T. LAHNERS, Belvidere.

### New Hampshire

*To Camp Upton,* L. I., N. Y., base hospital, Capt. D. E. SULLIVAN, Concord.

*To Fort Leavenworth, Kan.,* to examine the command for nervous and mental diseases, from Camp Pike, Capt. H. W. CLEASBY, Lancaster.

*To Fort Oglethorpe* for instruction, Capts. F. C. SWEENEY, East Jaffrey; A. J. MONGE, Newmarket; C. H. QUINN, West Concord; Lieuts. W. E. SMITH, Franklin; L. R. BROWN, Laconia; J. M. PAGE, Littleton; H. S. PLATTS, Troy; F. E. CLOW, Wolfsboro.

*To Walter Reed General Hospital,* Takoma Park, D. C., for duty, Capt. F. S. TOWLE, Portsmouth.

The following order has been revoked: *To Camp Las Casas,* San Juan, Porto Rico, base hospital, Lieut. J. C. ECKHART, Sanbornville.

### New Jersey

*To Camp A. A. Humphreys,* Accotink, Va., for duty, from Eastern Department, Lieuts. G. V. MORSE, Bloomfield; C. F. VORRHIS, Palmyra.

*To Camp Devens,* Ayer, Mass., base hospital, from Camp McClellan, Capt. W. JAMES, German Valley; from Camp Sherman, Lieut. N. FURST, Newark.

*To Camp Dix,* Wrightstown, N. J., base hospital, Lieut. N. H. PROBASCO, Plainfield.

*To Camp Gordon,* Atlanta, Ga., base hospital, Lieut. J. S. VANNAMAN, Princeton.

*To Camp Holabird,* Baltimore, Md., for duty, Lieut. B. W. BOTHYL, Paterson.

*To Camp Lee,* Petersburg, Va., base hospital, Lieut. J. L. FARDEN, Irvington.

*To Camp MacArthur,* Waco, Tex., for duty, from Fort Oglethorpe, Lieut. L. M. COLLINS, Greystone.

*To Camp Meade,* Admiral, Md., for duty, from Fort Oglethorpe, Capt. H. G. MACDONALD, Hackensack. To examine the command for nervous and mental diseases, Lieut. R. STEWART, Sacaucus.

*To Camp Pike,* Little Rock, Ark., for duty, from Camp Wheeler, Lieut. L. S. KELLEY, Newark; from Fort Oglethorpe, Lieut. M. CHESLER, Atlantic City.

*To Camp Sherman,* Chillicothe, Ohio, base hospital, from Camp Dix, Capt. A. F. MCBRIDE, Paterson.

*To Camp Upton, L. I., L. Y.,* base hospital, from Williamsbridge, Major W. A. SHERWOOD, Jersey City.

*To Camp Wadsworth,* Spartanburg, S. C., for duty, from Camp Upton, Lieut. C. H. PRATT, Plainfield; from Fort Oglethorpe, Lieut. L. J. BOHL, Paterson; from Hampton, Lieut. J. G. COLEMAN, Hamburg; from Southeastern Department, Lieut. M. B. KIRKPATRICK, Trenton.

*To Fort Des Moines, Ia.,* base hospital, from Fort McPherson, Major W. L. VROOM, Ridgewood.

*To Fort McHenry, Md.,* base hospital, from Camp Dix, Capt. L. E. Poole, West Hoboken; From Camp Greene, Lieut. L. M. KALAHER, Jersey City.

*To Fort Oglethorpe* for instruction, Capts. W. J. ARLITZ, Hoboken; H. V. HUBBARD, C. B. LUFBURROW, Plainfield; Lieuts. H. S. JONES, Arlington; J. S. MARK, Chrome; C. C. FERGUSON, Jersey City; L. S. BLUMBERG, R. D. SWAIN, F. C. WEBER, Newark; from Camp Devens, Lieut. J. J. O'CONNOR, Newark; from Camp Lee, Capt. W. A. NORVAL, Paterson.

*To Hoboken, N. J.,* for duty, from Camp Crane, Capt. J. A. HOLLAND, Montclair.

*To New Haven, Conn.,* for duty, from Camp Gordon, Lieut. G. E. HARHEN, Newark.

*To Rockefeller Institute* for instruction in the treatment of infected wounds, and on completion *to Camp Dix,* Wrightstown, N. J., base hospital, Capt. J. F. HAGERTY, Newark.

*Resignation of* Lieut. P. MARVEL, Atlantic City, accepted.

### New Mexico

*To Camp Cody,* Deming, N. M., base hospital, Capt. T. E. PRESLEY, Roswell.

*To Camp MacArthur,* Waco, Tex., for duty, from Camp Cody, Capt. O. J. WESTLAKE, Silver City.

*To Fort Riley* for instruction, Lieut. C. E. KINDALL, Burley.

The following order has been revoked: *To Camp Grant,* Rockford, Ill., for duty, from Camp Greene, Lieut. H. K. RIDDLE, Reserve.

### New York

*To Biltmore, N. C.,* for duty, Lieut. J. W. WALTHER, Brooklyn.

*To Camp Abraham Eustis,* Lee Hall, Va., camp hospital, from Williamsbridge, Capt. L. B. ROBINSON, New York. For duty, from Morrison, Capt. E. L. HAZELTINE, Jamestown.

*To Camp Bowie,* Fort Worth, Texas, base hospital, from Fort Oglethorpe, Capt. H. L. PURDY, New York.

*To Camp Crane,* Allentown, Pa., for duty, from Camp Dix, Capt. G. S. SHIBLEY, Lieut. W. FRIEDMAN, New York; from Camp Hancock, Lieuts. F. GLUCKSMAN, New York; H. D. MACFARLAND, Westerville; from Camp Jackson, Capt. G. M. PARKHURST, Bath; from New York, Major L. JACHES, New York.

*To Camp Custer,* Battle Creek, Mich., for duty, from Eastern Department, Lieut. A. S. KATZMAN, Floral Park.

*To Camp Devens,* Ayer, Mass., as assistant, to the division surgeon, from Eastern Department, Capt. L. W. FALKNER, Youngstown. With the board examining the troops for cardiovascular diseases, from Lakewood, Lieut. J. J. KEATING, New York.

*To Camp Dix,* Wrightstown, N. J., base hospital, Capt. G. W. BEATTY, Brooklyn.

*To Camp Dodge,* Des Moines, Ia., base hospital, from Camp Grant, Lieut. D. M. NATANSON, New York.

*To Camp Forrest,* Chickamauga Park, Ga., for duty, from Eastern Department, Capt. R. B. MORRIS, Olean.

*To Camp Gordon,* Atlanta, Ga., for duty, from Camp Greene, Lieut. W. H. TAYLOR, Brooklyn.

*To Camp Greene,* Charlotte, N. C., base hospital, Capt. R. M. JONES, New York; from Fort McPherson, Capt. T. S. WEST, Yonkers.

*To Camp Harry L. Jones,* Douglas, Ariz., for duty, from Vancouver Barracks, Lieut. A. H. WHEELER, Albany.

*To Camp Lee,* Petersburg, Va., base hospital, from Army Medical School, Lieut. H. BAKWIN, New York; from Camp Devens, Lieut. C. F. BOVE, Catskill.

*To Camp Logan,* Houston, Tex., base hospital, from Camp Beauregard, Capt. J. F. LONG, Brooklyn.

*To Camp MacArthur,* Waco, Texas, for duty, from Fort Oglethorpe, Lieut. D. J. TILLON, Elmira; from Southeastern Department, Major T. W. MALONEY, Geneva.

*To Camp McClellan,* Anniston, Ala., base hospital, from Fort Oglethorpe, Lieut. W. J. O'CONNELL, Brooklyn.

*To Camp Meade,* Admiral, Md., base hospital, Capt. S. J. KEYES, New York; from Fort Oglethorpe, Lieut. H. S. VAN NOSTRAND, Little Neck. For duty, from Camp Upton, Lieut. L. L. GOLDBLATT, New York; from Fort Oglethorpe, Lieut. E. J. LORENZE, New York. With the board examining the troops for cardiovascular diseases, from Lakewood, Lieut. S. KAHN, New York.

*To Camp Newton D. Baker,* El Paso, Texas, base hospital, from Camp Travis, Major J. E. DAUGHERTY, Brooklyn.

*To Camp Pike,* Little Rock, Ark., for duty, from Camp Gordon, Capt. W. N. BARNHARDT, Central Islip; from Fort Oglethorpe, Lieut. A. B. SULLIVAN, New York.

*To Camp Sevier,* Greenville, S. C., base hospital, from Fort Oglethorpe, Lieut. G. B. THAXTON, New York.

*To Camp Shelby,* Hattiesburg, Miss., base hospital, from New York, Lieut. H. E. SCHOONOVER, New York.

*To Camp Sheridan,* Montgomery, Ala., base hospital, from Camp Dix, Lieut. H. C. JOHNSTON, New York; from Camp Shelby, Lieuts. H. M. VANN, Brooklyn; A. E. VAN NESS, New York; from Camp Wadsworth, Lieut. F. V. HOEHN, Waterloo; from Richmond College, Va., Capt. C. T. GRAHAM, Rochester.

*To Camp Sherman,* Chillicothe, Ohio, base hospital, Lieut. H. M. GOODYEAR, New York.

*To Camp Upton, L. I., N. Y.,* base hospital, Capts. C. F. CLAASSEN, Brooklyn; E. FULLER, New York; Lieut. M. C. FISCHMAN, New York; from Hoboken, Major D. BOVAIRD, New York; from Walter Reed General Hospital, Capt. F. E. BROWN, Brooklyn; Lieut. J. L. FAGAN, New York. For duty, Capt. W. J. MCGRATH, Sylvan Beach.

*To Camp Wadsworth,* Spartanburg, S. C., for duty, from Camp Upton, Lieut. M. A. RAMIREZ, New York; from Fort Oglethorpe, Lieut. T. M. REID, Jr., Brooklyn; from Northwestern Department, Capt. J. RAPHAEL, Brooklyn.

*To Camp Wheeler,* Macon, Ga., base hospital, from Camp Sheridan, Lieut. G. J. SIGNORELLI, Brooklyn; from Fort Ontario, Major L. D. MCEVOY, New York.

*To Columbus Barracks, O.,* for duty, from Fort Benjamin Harrison, Lieut. M. A. SAGOWITZ, New York.

*To Detroit, Mich.,* for duty, from Eastern Department, Capt. E. E. GILLICK, Niagara Falls.

*To Fort Benjamin Harrison, Ind.,* for duty, from Camp Sherman, Lieut. A. M. MULHOLLAND, New York.

*To Fort Des Moines, Ia.,* base hospital, from Camp Greene, Capt. C. H. BALDWIN, Utica.

*To Fort McHenry, Md.,* base hospital, from Camp Hancock, Lieut. W. E. DIEFENBACH, Munde; from Camp Meade, Capt. R. L. CROCKETT, Oneida. For duty, Lieut. J. AIKMAN, Rochester.

*To Fort McPherson, Ga.,* base hospital, from Camp Crane, Major W. E. BUTLER, New York.

*To Fort Omaha, Neb.,* for duty, from Fort Worth, Lieut. A. G. COOK, Brooklyn.

*To Fort Oglethorpe,* base hospital, from New York City, Lieut. B. M. BERNSTEIN, Brooklyn. For duty, from Biltmore, Lieut. A. E. GORDIN, New York; from Chicago, Lieut. J. L. LINN, Brooklyn. For instruction, Major T. DARLINGTON, New York; Capts. G. F. CLARK, J. E. COSGROVE, I. M. HOLLY, Brooklyn; J. C. TEAS, Flushing; W. P. JACOCKS, V. W. PERKINS, New York; E. W. JACKSON, Rochester; D. C. PATERSON, Yonkers; Lieuts. J. H. BOWERS, Albany; E. DAVIS, Blackwell's Island; J. A. BILLETO, G. FLAMM, G. KORNFELD, I. G. LORNER, S. SHAPIRO, I. E. SUMNER, S. TIRMAN, M. WEINBERGER, L. J. WOODWORTH, Brooklyn; V. W. DUTTON, Burlington Flatte; S. W. CLAUSON, Canandaigua; R. M. PALMER, Gloversville; A. WALKER, Irondequoit; G. A. DISTLER, L. M. ROHR, Jamaica; M. L. HILLAMAN, Little Valley; H. ACKERMAN, A. ANESH, A. S. BLUMGARTEN, F. C. COSTEN, S. M. HYMAN, N. B. JENKINS, M. KUPPERMAN,

L. LURIE, S. W. ROCK, C. RUDNICK, A. R. SHIRLEY, L. SIEGAL, W. STEINHAUSER, E. STERN, E. H. SUTLIFF, G. E. WURTZEL, New York; S. S. BULLEN, E. S. GREENE, Rochester; M. SHIMBERG, F. S. WETHERELL, Syracuse; H. G. BALDWIN, Tannersville; T. B. HENRY, Tompkinsville; E. W. WILKINS, West Albany; from Camp Dix, Lieut. H. C. JOHNSTON, New York; from Camp Hancock, Lieut. R. W. TURNER, Albany; from Camp McClellan, Lieut. J. J. BOLAND, New York.

*To Fort Ontario, N. Y.*, base hospital, from Camp McClellan, Lieut. W. L. WEEDON, Clifton Springs.

*To Fort Sam Houston, Texas*, base hospital, Lieut. A. RAVICH, Brooklyn. For duty, from Houston, Capt. G. W. CRISSEY, Mechanicsville.

*To Fort Sill, Okla.*, base hospital, from Walter Reed General Hospital, Lieut. A. W. JACOBS, New York.

*To Fort Thomas, Ky.*, for duty, Lieut. M. L. FUCHS, New York.

*To Fort Worth, Texas*, for duty, from Fort Oglethorpe, Lieuts. L. K. STELLE, Kingston; E. C. WINSOR, Syracuse.

*To Hoboken, N. J.*, base hospital, from Fort Oglethorpe, Capt. G. D. DARE, Morrisonville; Lieut. F. BRANCATO, New York. For duty, from Camp Bowie, Lieut. M. J. HOY, Yonkers; from Camp Crane, Lieut. H. E. GAK, South Onondaga; from Fort Riley, Capt. O. E. UTZINGER, Ithaca; from Wichita Falls, Lieut. B. ARENSON, Brooklyn.

*To Lakewood, N. J.*, for duty, Capt. G. G. STRAUB, Brooklyn.

*To Mineola, L. I., N. Y.*, for duty, from Fort Oglethorpe, Lieut. F. B. MAGUIRE, Albany; from Fort Sill, Capt. J. D. GULICK, Schenectady. Signal Corps Aviation School, for instruction, from New York, Capt. W. A. SCRUTON, New York.

*To New Haven, Conn.*, as instructor, from Fort Slocum, Capt. F. B. TRUDEAU, Saranac Lake. For duty, from Camp Devens, Capt. H. JUDOWITZ, Brooklyn; from Camp Joseph E. Johnston, Capt. R. E. PLUNKETT, Whitehall. Yale Army Laboratory School, for instruction, from Army Medical School, Lieuts. R. P. DOBBIE, F. W. PALMER, Buffalo; from Fort Leavenworth, Lieut. E. J. PELLINI, New York.

*To Newport News, Va.*, for duty, from Camp Gordon, Lieut. A. E. SMITH, Cohoes; from Camp Jackson, Capt. C. F. YERDON, Brooklyn; from Fort Oglethorpe, Lieuts. K. A. SMITH, Lackawanna; M. ALEXANDERS, New York; G. B. GILMORE, Staten Island.

*To New York*, Bellevue Hospital, for instruction, and on completion *to Camp Greene*, Charlotte, N. C., base hospital, from duty as a private, Lieut. A. MILICI, New York. Neurological Institute, for instruction, Lieut. S. SILBERT, New York.

*To Ogdensburg, N. Y.*, for duty, and on completion *to the inactive list*, Capt. E. J. WYNKOOP, Syracuse.

*To Philippine Department* for duty, from Washington, Major F. J. ELSENMAN, New York.

*To Rantoul, Ill.*, for duty, from Mineola, Capt. T. F. BRIDGMAN, New York.

*To report to the commanding general*, Eastern Department, for assignment to duty, Major W. T. HELMUTH, New York.

*To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Sherman, Lieut. J. A. CAMPBELL, New York.

*To Rockefeller Institute* for instruction in the treatment of infected wounds, and on completion *to Fort Oglethorpe* for instruction, Capt. E. K. TANNER, Brooklyn. On completion *to his proper station*, from Camp Dix, Lieut. F. S. SCHOONOVER, Rochester; from Camp Greene, Capt. W. S. COOKE, Otego; Lieut. W. L. MUNSON, Granville.

*To Syracuse, N. Y.*, as orthopedic surgeon, from Fort McPherson, Lieut. F. N. POTTS, Buffalo. For duty, from Camp Devens, Capt. M. A. ROTHSCHILD, New York; from New Haven, Lieuts. J. J. RANDALL, Albany; F. C. BALDERREY, Ithaca; B. R. KELLEY, New York.

*To Walter Reed General Hospital*, Takoma Park, D. C., for duty, Capt. J. KETTERLE, Brooklyn; Lieut. R. G. FOWLER, Buffalo.

*To Washington, D. C.*, for duty, from Eastern Department, Capt. E. L. AYME, New York.

*To Waynesville, N. C.*, for duty, from New Haven, Capt. M. E. LEARY, Rochester.

*To Williamsbridge, N. Y.*, for duty, Lieut. D. S. FETTES, Brooklyn.

*Honorably discharged* on account of physical disability existing prior to entrance into the service, Major T. W. HASTINGS, New York.

*Resignations* of Major R. A. HIBBS, New York, Capt. M. McDANIELS, Ithaca; Lieut. T. BELL, Brooklyn, accepted.

The following orders have been revoked: *To Fort Oglethorpe* for instruction, Lieuts. G. S. DUDLEY, New York; F. A. KNOPE, Rochester. *To Hoboken, N. J.*, base hospital, from Camp Upton, Lieut. W. H. SEWARD, Amsterdam. *To Newport News, Va.*, for duty, from Camp A. A. Humphreys, Lieut. D. PASHMAN, Brooklyn.

## North Carolina

*To Camp A. A. Humphreys*, Accotink, Va., for duty, from Eastern Department, Lieut. B. B. STURDIVANT, Sunburst.

*To Camp Bowie*, Fort Worth, Texas, for duty, from Western Department, Capt. R. B. HAYES, Hillsboro.

*To Camp Dodge*, Des Moines, Ia., for duty, from Camp Perry, Lieut. J. C. DYE, Statesville.

*To Camp Pike*, Little Rock, Ark., for duty, from Camp Travis, Lieut. E. M. McIVER, Jonesboro; from Western Department, Capt. O. L. STRINGFIELD, Jr., Mars Hill.

*To Camp Sevier*, Greenville, S. C., for duty, from Camp Wheeler, Lieut. E. S. BARR, Asheville.

*To Camp Shelby*, Hattiesburg, Miss., base hospital, Lieut. C. P. MANGAM, Kinston.

*To Camp Wadsworth*, Spartanburg, S. C., for duty, from Fort Oglethorpe, Lieut. P. S. EASLEY, Statesville; from Southeastern Department, Lieut. M. R. FARRAR, Greensboro.

*To Fort McHenry, Md.*, base hospital, from Biltmore, N. C., Major W. L. DUNN, Asheville.

*To Fort Oglethorpe* for instruction, Capts. H. D. STEWART, Monroe; M. A. BOWERS, Thomasville; Lieuts. G. C. BATTLE, Asheville; J. L. RAWLS, Gatesville; W. B. MEARES, Jr., Linwood; W. W. JOHNSTON, Nanteo; H. E. ROWE, Newton; W. C. THOMAS, Raeford.

*To Hoboken, N. J.*, base hospital, from duty as aide to the governor of North Carolina, Major J. W. LONG, Greensboro.

*To New Haven, Conn.*, for duty, Lieut. W. T. LONG, Roxboro.

*Resignation* of Lieut. S. R. THOMPSON, Charlotte, accepted.

## North Dakota

*To Camp Custer*, Battle Creek, Mich., for duty, from Camp Dodge, Lieut. J. R. MACKENZIE, Carrington.

*To Camp Dodge*, Des Moines, Ia., for duty, from Camp Beauregard, Capt. G. V. JAMIESON, Devils Lake.

*To Camp McClellan*, Anniston, Ala., base hospital, from New York, Lieut. J. A. D. ENGESATHER, Brocket.

*To Camp Pike*, Little Rock, Ark., for duty, from Fort Douglas, Lieut. J. R. BRENCKLE, Kulm.

*To Fort Des Moines, Ia.*, base hospital, from Camp Grant, Capt. R. D. CAMPBELL, Grand Forks.

*To Fort Oglethorpe* for instruction, Capt. G. P. SHEPARD, Jamestown; Lieut. J. B. TYRRELL, Underwood.

*To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to his proper station*, from Fort Riley, Capt. O. W. McCLUSKY, Carrington.

## Ohio

*To Azalea, N. C.*, for duty from Markleton, Capt. H. K. DUNHAM, Cincinnati.

*To Camp Bowie*, Fort Worth, Texas, for duty, from Western Department, Lieut. C. D. TODD, McComb.

*To Camp Crane*, Allentown, Pa., base hospital, from Camp Zachary Taylor, Lieut. G. S. MYTINGER, Portsmouth. For duty, from Camp Beauregard, Lieut. J. E. McCLELLAND, Cleveland; from Camp Sherman, Capt. J. T. MERWIN, Athens.

*To Camp Custer*, Battle Creek, Mich., base hospital, Lieut. G. T. MEADE, Columbus.

*To Camp Forrest*, Chickamauga Park, Ga., for duty, from Fort Oglethorpe, Capt. H. N. ERVIN, Dayton.

*To Camp Gordon*, Atlanta, Ga., for duty, from Camp Greene, Lieut. G. E. FLINN, Amesville.

*To Camp Grant*, Rockford, Ill., base hospital, Lieut. E. H. McDONALD, Bloomingburg.

*To Camp Lee*, Petersburg, Va., base hospital, from Army Medical School, Lieut. F. C. PAYNE, Dayton; from New York, Lieut. R. C. ASH, Ashland.

*To Camp Meade*, Admiral, Md., for duty, from Fort Oglethorpe, Lieut. M. MAHRER, Cleveland; W. DEERHAKE, St. Mary's. With the board examining the troops for cardiovascular diseases, from Lakewood, Lieut. J. C. MONNIER, Cleveland.

*To Camp Pike*, Little Rock, Ark., for duty, from Fort Logan H. Roots, Lieut. F. E. SOLIER, Bryan. To examine the command for nervous and mental diseases, from Fort Logan, Lieut. G. R. REEVE, Cleveland.

*To Camp Sevier*, Greenville, S. C., base hospital, Capt. W. M. AYRES, Cincinnati.

*To Camp Sheridan*, Montgomery, Ala., base hospital, Lieut. J. J. JENNIE, Cincinnati.

*To Camp Wadsworth*, Spartanburg, S. C., base hospital, from Camp Sherman, Lieut. T. S. KEYSER, Springfield. For duty, from Fort Oglethorpe, Capt. W. T. GATCHELL, Ravenna; Lieut. J. C. McCLESTER, Harrisville; from Southern Department, Capt. L. H. McALLISTER, Highland.

*To Camp Wheeler*, Macon, Ga., base hospital, from Camp Gordon, Lieut. J. J. VEGA, National Military Home.

*To Fort Oglethorpe*, base hospital, from Camp Wheeler, Capt. F. S. GIBSON, Cleveland; from New York City, Lieut. B. H. NICHOLS, Ravenna. For duty, from Chicago, Lieut. R. B. BOWEN, Toledo. For instruction, Capts. C. A. DIXON, Akron; E. A. MURBACH, Archbold; J. FRIDLIE, Ashland; A. H. STALL, Barberton; A. E. IBERSHOFF, H. G. SLOAN, C. B. THOMAS, Cleveland; H. J. HERRICK, Hudson; A. H. HERR, Lima; H. M. FLOWER, Toledo; Lieuts. E. B. TAYLOR, Arcadia; C. R. JOHNSON, Cambridge; C. H. CABLE, Canton; J. S. PODESTA, Cincinnati; W. P. LOWRY, P. M. SPURNEY, Cleveland; J. L. BUSBY, W. E. DUFFEE, J. H. VORHES, Columbus; C. M. TREFFINGER, Eaton; M. H. SCOTT, Harrison; L. A. HAYS, Johnstown; E. C. YINGLING, Lima; P. G. SMITH, Oxford; S. V. KENNEDY, Phalanx Station; I. P. SEILER, Piketon; R. F. WHITACRE, Prairie Depot; S. E. EAGON, Salesville; H. GRAFFE, Sandusky; J. H. RILEY, Springfield; R. B. CURL, E. G. MAY, A. J. RICHIE, G. M. WRIGHT, Toledo; W. H. STRATHMANN, West Toledo; N. N. MEYER, Youngstown.

*To Fort Riley* for duty, from Army Medical School, Major A. W. FREEMAN, Columbus.

*To Fort Sill, Okla.*, for duty, Capt. S. IGLAUER, Cincinnati.

*To Hoboken, N. J.*, for duty, from Camp Crane, Capt. A. E. SNYDER, Byron.

*To New Haven, Conn.*, for duty, Capt. A. FALLOR, Cincinnati. Yale Army Laboratory School, for duty, Lieut. D. J. SLOSSER, Ridgeville Corners; from Fort Leavenworth, Capt. H. R. WAHL, Cleveland; from Rockefeller Institute, Lieut. R. H. MARKWITH, Columbus.

*To Newport News, Va.*, for duty, from Fort Oglethorpe, Lieuts. D. L. REES, Cleveland; H. W. RECK, Gettysburg.

*To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to his proper station*, from Fort Riley, Lieut. C. F. WHARTON, Akron.

*To Rockefeller Institute* for instruction in the treatment of infected wounds, and on completion, *to his proper station*, from Camp Sherman, Capt. W. C. GATES, Bucyrus.

*To Washington, D. C.*, for consultation, and on completion *to Carlisle, Pa.*, for duty, from Camp Devens, Capt. A. C. BACHMAYER, Cincinnati. For duty, from Camp Meade, Lieut. L. A. MITCHELL, Newark.

*Honorably discharged* on account of physical disability exsting prior to entrance into the service, Lieuts. I. W. MATUSKA, Cleveland; J. W. CLARKE, Vinton.

The followng order has been revoked: *To Camp Las Cascas*, San Juan, P. R., base hospital, from Camp Lee, Lieut. R. A. THORNTON, Columbus.

## Oklahoma

*To Camp Crane*, Allentown, Pa., for duty, from Camp Grant, Lieut. J. La ROCK, Lexington; from Fort Bliss, Lieut. B. H. WATKINS, Gotebo.

*To Camp Jackson*, Columbia, S. C., for duty, from Eastern Department, Capt. J. H. STOLPER, Muskogee.

*To Camp Logan*, Houston, Texas, base hospital, Capt. L. M. WESTFALL, Oklahoma.

*To Camp MacArthur*, Waco, Texas, for duty, from San Antonio, Capt. S. R. EVANS, Stilwell.

*To Camp Pike*, Little Rock, Ark., base hospital, from Camp MacArthur, Lieut. J. W. HENRY, Oklahoma.

*To Camp Wadsworth*, Spartanburg, S. C., for duty, from Southern Department, Capt. G. L. HARKER, Elk City.

*To Fort Logan H. Roots, Ark.*, base hospital, from Corpus Christi, Major F. H. CLARK, El Reno.

*To Fort Oglethorpe* for instruction, Capt. T. F. WOOD, Sallisaw; Lieuts. I. MULLINS, Hominy; B. HARRIS, Jenks; R. I. ALLEN, Nowata; R. A. DOUGLAS, R. W. DUNLAP, Tulsa; from Camp Greene, Capt. J. H. WHITE, Muskogee.

*To Fort Riley* for instruction, Capt. H. C. BROWN, Okarcha; Lieuts. P. E. WRIGHT, Albion; R. C. BAKER, Arcadia; J. T. LOWE, Blair; B. W. BAKER, Cloudchief; W. M. RIVERS, Douthat; C. O. WILLIAMS, McAlester; W. G. RAMSAY, McCurtain; F. MOSELEY, Millerton, D. D. ROBERTS, Nash; J. H. NOAH, Oilton; H. BLENDER, Okeene; J. F. KELLY, Oklahoma; A. S. SPANGLER, Pauls Valley; J. D. WINTER, Poteau; J. T. SANDLIN, Vian.

*To Hoboken, N. J.*, base hospital, from Fort Oglethorpe, Lieut. C. C. SHAW, McAlester. For duty, from Camp Bowie, Capt. R. G. BOLEND, Oklahoma City; from Camp Crane, Lieut. H. S. DRUMMOND, Haileyville.

*To Newport News, Va.*, for duty, from Fort Oglethorpe, Lieuts. B. G. JONES, Oklahoma City; L. H. CARLETON, Tulsa.

*To report to the commanding general*, Southern Department, for assignment to duty, Lieuts. I. L. GENTRY, Bonnington; T. L. ARTZ, Kiefer, R. D. LOWTHER, Norman.

*Honorably discharged* on account of physical disability existing prior to entrance into the service, Lieut. C. G. CONLEY, Frederick.

## Oregon

*To Camp Abraham Eustis*, Lee Hall, Va., sanitary personnel, Lieut. E. J. GAMBEE, Portland.

*To Camp Dodge*, Des Moines, Ia., for duty, from Western Department, Lieut. F. C. HART, Portland.

*To Camp Grant*, Rockford, Ill., for duty, from Fort Riley, Capt. B. F. SCAIEFE, Eugene.

*To Camp Kearney*, Linda Vista, Calif., for duty, from Portland, Lieut. E. E. ANDERSON, Portland.

*To Camp Lewis*, American Lake, Wash., base hospital, Lieut. G. L. BOYDEN, Pendleton.

*To Camp Logan*, Houston, Tex., base hospital, from Camp Kearney, Lieut. H. J. ANDERSON, Carvallie.

*To Camp MacArthur*, Waco, Tex., base hospital, from Camp Kearney, Lieut. R. W. CAHILL, Portland.

*To Camp Pike*, Little Rock, Ark., for duty, from Western Department, Lieuts. W. E. HEDGES, Juntura.

*To Fort Des Moines, Ia.*, base hospital, from Camp Sheridan, Lieut. B. N. WADE, Portland.

*To Fort Oglethorpe*, as instructor, from Fort Riley, Capt. R. R. HAMILTON, Klamath Falls. For instruction, Lieuts. R. E. WATKINS, K. H. MARTZLOFF, Portland.

*To San Francisco, Calif.*, for instruction, and on completeion *to his proper station*, from Camp Lewis, Capt. E. A. SOMMER, Portland.

*To Letterman General Hospital*, for duty, from Fort Gordon, Capt. G. MacCRACKEN, Ashland.

## Pennsylvania

*To Azalea, N. C.*, for duty, from New Haven, Capt. W. G. TURNBULL, Cresson.

*To Camp A. A. Humphreys*, Accotink, Va., for duty, from Eastern Department, Lieut. W. J. LYNCH, Philadelphia.

*To Camp Bowie*, Fort Worth, Texas, base hospital, from Camp Zachary Taylor, Lieut. H. P. PROWITT, Washington; from Fort Sam Houston, Lieut. D. M. AIKMAN, Brockwayville. For duty, from New York, Lieut. E. P. WICKERHAM, Pittsburgh.

*To Camp Crane*, Allentown, Pa., for duty, from Camp Dix, Lieut. F. GUILLARD, Breezewood; from Camp Hancock, Capt. T. I. O'DRAIN, Philadelphia.

*To Camp Custer*, Battle Creek, Mich., base hospital, Major J. D. MILLIGAN, Pittsburgh.

*To Camp Dodge*, Des Moines, Ia., for duty, from Fort Porter, Capt. W. S. RUCH, Carlisle.

*To Camp Fremont*, Palo Alto, Calif., for duty, from Camp Cody, Capt. E. E. JOHNSON, Philadelphia.

*To Camp Gordon*, Atlanta, Ga., base hospital, Capt. B. A. MONTGOMERY, Grove City.

*To Camp Hancock*, Augusta, Ga., base hospital, Capt. R. C. TORREY, Philadelphia; Lieut. L. H. STUART, Pittsburgh; from Camp Sevier, Major G. FETTEROLF, Philadelphia.

*To Camp Lee*, Petersburg, Va., base hospital, Capt. A. E. THOMPSON, Washington; from Fort Oglethorpe, Capt. M. E. STOVER, Pittsburgh; from Fort Screven, Capt. A. C. MORGAN, Philadelphia. For duty, from Fort Oglethorpe, Lieut. R. L. LANGDON, Philadephia.

*To Camp Logan*, Houston, Texas, base hospital, from Camp Beauregard, Capt. L. M. JACOBS, Philadelphia.

*To Camp MacArthur*, Waco, Texas, for duty, from Fort Oglethorpe, Lieut. R. J. FORD, Pittsburgh.

*To Camp McClellan*, Anniston, Ala., base hospital, from Lakewood, Capt. J. C. KEELER, Philadelphia.

*To Camp Meade*, Admiral, Md., for duty, from Army Medical School, Lieut. I. L. MESSMORE, Masontown; from Camp Dix, Lieut. R. H. KISTLER, Lansford; from Camp Upton, Lieut. H. C. KINZER, Lancaster; from Fort Oglethorpe, Lieuts. J. R. PARKER, Chester; D. E. SZABO, Dusquesne.

*To Camp Pike*, Little Rock, Ark., for duty, Lieut. D. I. KIRK, Pittsburgh; from Camp Gordon, Lieut. D. J. LANGTON, Philadelphia; from Camp Wheeler, Lieut. A. BERNSTEIN, Philadelphia; from Camp Zachary Taylor, Lieut. A. H. YARNALL, Pittsburgh.

*To Camp Raritan*, Metuchen, N. J., with the board examining the troops for cardiovascular diseases, from Lakewood, Lieut. J. L. STILEL, Pittsburgh.

*To Camp Sevier*, Greenville, S. C., for duty, from Southeastern Department, Capt. W. H. NIX, Indiana.

*To Camp Sheridan*, Montgomery, Ala., base hospital, from Camp Shelby, Lieut. W. P. NOLAN, New Kensington. With the board examining troops for tuberculosis, from Fort Benjamin Harrison, Lieut. J. H. GOLDSTEIN, Pittsburgh.

*To Camp Sherman*, Chillicothe, Ohio, as camp phychiatrist, from Camp Meade, Lieut. F. FRALEY, Philadelphia. Base hospital, from Camp Gordon, Major J. P. KERR, Pittsburgh.

*To Camp Upton, L. I., N. Y.*, base hospital, Lieuts. F. G. PATTERSON, DuBois; J. W. BARR, Nanty Glo; from Walter Reed General Hospital, Lieut. E. N. HAGIN, Sharon.

*To Camp Wadsworth*, Spartanburg, S. C., for duty, from Camp Dix, Capt. C. F. M. LEIDY, Philadelphia; from Fort Porter, Capt. W. S. RUCH, Carlisle; from Northeastern Department, Lieuts. W. L. CRAWFORD, Dillsburg; G. A. PARKER, South Bethlehem. With the board examining the troops for cardiovascular diseases, from Lakewood, Lieut. M. FRISHMAN, Pittsburgh.

*To Camp Wheeler*, Macon, Ga., as division tuberculosis specialist, from Camp Jackson, Major J. W. BOYCE, Pittsburgh. As orthopedic surgeon, from Fort McPherson, Lieut. M. A. COHEN, Pittsburgh. Base hospital, from Camp Grant, Lieut. C. J. STAMM, Philadelphia.

*To Fort Logan H. Roots, Ark.*, base hospital, from New York, Lieut. F. R. WISE, York.

*To Fort McHenry, Md.*, base hospital, from Camp Hancock, Lieut. W. L. SNYDER, Brookville; from Camp McClellan, Lieut. L. J. LEAMY, Philadelphia, from Camp Shelby, Capt. E. PAINE, Heights.

*To Fort Oglethorpe* for duty, from New York, Capt. W. VAN KORB, Philadelphia. For instruction, Major E. LAPLACE, Philadelphia; Capts. J. A. LYNCH, Cresson; W. R. DICKSON, W. A. LaROSS, McDonald; T. A. STEELE, McKeesport; W. L. CAMPBELL, New Castle; G. H. DENNEY, H. W. MILLER, H. M. O'REILLY, W. B. SMALL, Philadelphia; T. EVANS, Jr., A. F. B. MORRIS, Pittsburgh; W. C. SHAW, Ridgway; C. C. STANTON, Sharpsburg; J. L. GALLAGHER, Steelton; H. W. GASS, J. W. SCHOFTSTALL, Sunbury; J. H. HASLETT, Vanderbilt; Lieuts. J. K. WAGENSELLER, Bloomsburg; C. M. THOMAS, Garrick; G. A. SHUMAN, Catawissa; W. L. COLEMAN, Easton; C. C. KEMBLE, Erie; R. T. KLINE, Evans City; W. S. BELL, Greensburg; J. M. ROBBINS, Harrisburg; H. B. BUTERBAUGH, Indiana; K. A. BOWMAN, Johnstown; U. G. BICKELL, Kennett Square; L. LASHER, Kittanning; H. R. THORNTON, Lewisburg; J. A. LAFFERTY, McKees Rocks; D. N. KOONTZ, New Kensington; C. W. RICE, Northumberland; E. G. HENRY, Oil City; O. H. STROUSE, Perkasie; C. R. HAIG, W. H. OSTRUM, L. G. SMITH, Philadelphia; C. A. YOCUM, Phoenixville; W. T. BURLEIGH, J. O. DONALDSON, L. LASDAY, A. M. MILLIGAN, Pittsburgh; W. G. MOYER, J. A. WEIRBACH, Quakertown; R. J. HAWS, Reading; H. T. RYAN, Schuylkill Haven; C. R. MORSS, Scranton; G. M. B. BRADSHAW, Sugar Grove; R. C. HUGHES, Tredyffrin; F. G. SCHULER, Warren; C. E. LERCH, D. G. MOYER, Wyomissing.

*To Fort Ontario, N. Y.*, base hospital, from Camp Dix, Lieut. M. A. BLUMER, Pittsburgh; from Fort Oglethorpe, Lieut. L. C. DRUFFNER, Avoca; from New York, Lieut. G. L. LAVERTY, Harrisburg.

*To Fort Porter, N. Y.*, for duty, from Camp Pike, Lieut. W. W. MILLS, DuQuesne.

*To Fort Sill, Okla.*, base hospital, from Walter Reed General Hospital, Capt. F. W. DAVIS, Scranton.

*To Fort Worth, Texas*, for duty, from Garden City, Capt. B. C. GILE, Philadelphia.

*To Hoboken, N. J.*, base hospital, from Fort Oglethorpe, Capts. J. S. WINTERSTEEN, Moorestown; M. SOLIS-COHEN, Philadelphia; Lieut. F. L. ALEXAITIS, Wilkes-Barre. For duty, from Cape May, Lieut. J. H. ARNETT, Philadelphia; from Fort Oglethorpe, Lieut. S. KALLAWAY, Homestead.

*To Houston, Texas*, for duty, from Fort Oglethorpe, Lieut. G. B. SICKEL, Chester.

*To Mineola, L. I., N. Y.*, for duty, from Fort Oglethorpe, Lieut. M. A. BRADFORD, Pittsburgh. For instruction, from Fort Worth, Capt. E. E. CAMPBELL, Butter.

*To New Haven, Conn.*, for duty, Capt. J. WALSH, Philadelphia. Yale Army Laboratory School, for duty, Lieut. G. A. DAPP, Harrisburg.

*To Newport News, Va.*, for duty, from Fort Oglethorpe, Lieut. B. B. SMITH, Philadelphia.

*To Plattsburg Barracks, N. Y.*, for duty, from New York, Lieut. H. B. MIKELBERG, Philadelphia.

*To Richmond, Va.*, for duty, from Newport News, Major G. C. BOUGHTON, Erie.

*To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Sherman, Lieut. G. GINSBURG, Philadelphia.

*To Rockefeller Institute* for instruction in the treatment of infected wounds, and on completion *to his proper station*, from Camp Meade, Lieut. J. H. BARTLEY, Jr., Philadelphia. On completion *to Williamsbridge, N. Y.*, for duty, from Camp Humphreys, Capt. D. F. JACKSON, Pittsburgh.

*To Syracuse, N. Y.*, for duty, from New Haven, Capt. J. B. CRAWFORD, Pittsburgh.

*To Washington, D. C.*, for duty, from Eastern Department, Capt. W. S. STEWART, McDonald. For duty in the Surgeon-General's Office, from Fort Oglethorpe, Lieut. S. B. PEARCE, Pittsburgh. St. Elizabeth's Hospital, for intensive training, Lieut. W. L. HAIR, Roaring Springs.

*To Willoughby, Ohio*, for duty, from Lakehurst, Lieut. M. M. WOLFE, New Kensington.

*Honorably discharged* on account of physical disability existing prior to entrance into the service, Lieuts. W. K. SHEA, P. A. TRAU, Philadelphia.

The following orders have been revoked: *To Camp Raritan*, Metuchen, N. J., with the board examining the troops for cardiovascular diseases, from Lakewood, Lieut. W. D. STROUD, Philadelphia. *To Camp Upton, L. I., N. Y.*, for duty, from Camp Holabird, Lieut. H. S. BUSLER, Philadelphia.

## Porto Rico

*To Camp Las Casas*, San Juan, P. R., for duty, Lieut. P. J. ZAMERA, Aquadilla; J. S. MORALES, Camupy; from Camp Dodge, Lieut. A. D. LANGIER, San Juan; from duty as a cadet, Lieut. J. LASTRA, Ponce.

*To San Diego, Calif.*, for duty, from Mineola, Major E. I. VAUGHN, Central Aguirre.

## Rhode Island

*To Camp Custer*, Battle Creek, Mich., for duty, from Northeastern Department, Lieut. R. METCALFE, Providence.

*To Camp Devens*, Ayer, Mass., base hospital, Capt. W. A. RISK, Providence.

*To Camp Dodge, Des Moines, Iowa*, base hospital, from Army Medical School, Capt. W. G. DWINNELL, Providence.

*To Camp MacArthur*, Waco, Texas, for duty, from Fort Oglethorpe, Lieut. T. S. FLYNN, Woonsocket.

*To Camp Meade*, Admiral, Md., base hospital, Capt. P. W. HESS, Pawtucket.

*To Camp Shelby*, Hattiesburg, Miss., base hospital, from Camp Sherman, Capt. H. E. BLANCHARD, Providence.

*To Camp Sherman*, Chillicothe, Ohio, base hospital, from Rockefeller Institute, Capt. H. C. PITTS, Providence.

*To Cape May, N. J.*, for duty, Lieut. F. N. BIGELOW, Providence.

*To Fort McHenry, Md.*, base hospital, from Camp Dix, Capt. J. B. FERGUSON, Providence.

*To Hoboken, N. J.*, base hospital, from Fort Oglethorpe, Lieut. H. J. GALLAGHER, Providence.

### South Carolina

*To Camp Bowie,* Fort Worth, Texas, base hospital, from Fort Logan H. Roots, Lieut. J. M. WALLACE, Greenville. For duty, from Western Department, Lieut. W. S. McMURRAY, Lockhart.

*To Camp Crane,* Allentown, Pa., for duty, from Camp Wadsworth, Lieut. M. C. SMITH, Simpsonville.

*To Camp MacArthur,* Waco, Texas, base hospital, from Camp Joseph E. Johnston, Lieut. J. D. VERNER, Jr., Walhalla.

*To Camp Meade,* Admiral, Md., for duty, from Fort Oglethorpe, Lieut. V. M. ROBERTS, Blacksburg.

*To Camp Upton, L. I., N. Y.,* base hospital, from Camp Dix, Lieut. H. B. THOMAS, Chester.

*To Camp Wadsworth,* Spartanburg, S. C., for duty, from Southeastern Department, Capt. W. A. SMITH, Charleston.

*To Camp Zachary Taylor,* Louisville, Ky., base hospital, from Fort Logan H. Roots, Capt. J. WALLACE, Easley.

*To Fort Oglethorpe* for instruction, Capts. C. C. GAMBRELL, Abbeville; M. CROOK, Spartanburg; S. G. SARRATT, Union; Lieuts. J. C. MITCHELL, W. H. PRICE, Charleston; C. M. SCOTT, Darlington; H. T. BOOZER, Saluda.

*To Fort Riley* for instruction, Lieut. J. H. MILLS, Mayesville.

*To New Haven, Conn.,* for duty, Capt. H. B. MALONE, Chester.

*To Rochester, Minn.,* Mayo Clinic, for instruction, and on completion *to his proper station,* from Camp Custer, Capt. L. PETERS, Columbia.

### South Dakota

*To Camp Pike,* Little Rock, Ark., base hospital, Capt. B. A. BOBB, Mitchell.

*To Camp Wheeler,* Macon, Ga., base hospital, from Camp Grant, Major J. A. MATTISON, Hot Springs.

*To Fort Des Moines, Ia.,* base hospital, from Camp Custer, Lieut. C. N. HARRIS, Wilmot; from Camp Grant, Lieut. R. R. FISK, Brookings.

*To Fort Oglethorpe* for instruction, Capt. S. M. HOHF, Yaukton.

*To Fort Riley* for instruction, Capt. H. A. GUEFFROY, Frankfort.

The following order has been revoked: *To Camp Dodge,* Des Moines, Ia., base hospital, Capt. J. D. WHITESIDE, Aberdeen.

### Tennessee

*To Camp Abraham Eustis,* Lee Hall, Va., for duty, from Fort Oglethorpe, Lieut. G. C. THOMAS, Greenfield.

*To Camp Devens,* Ayer, Mass., base hospital, from Camp Zachary Taylor, Lieut. A. D. SHARP, Murfreesboro.

*To Camp Forrest,* Chickamauga Park, Ga., for duty, from Eastern Department, Lieut. J. P. DELANCY, Arrington.

*To Camp Lee,* Petersburg, Va., base hospital, Lieuts. J. M. STEWART, Martin; C. COLLIER, Memphis; from Fort Oglethorpe, Major W. G. SOMERVILLE, Memphis.

*To Camp MacArthur,* Waco, Texas, base hospital, from New York, Lieut. R. E. SEMMES, Memphis.

*To Camp Meade,* Admiral, Md., for duty, from Fort Oglethorpe, Lieut. L. O. WILKERSON, Stanton; from the Surgeon-General's Office, Capt. L. A. STONE, Memphis.

*To Camp Pike,* Little Rock, Ark., for duty, from Fort Oglethorpe, Capt. H. REESE, Gallatin; from Fort Riley, Lieut. H. O. ANDERSON, Williamsport.

*To Camp Wadsworth,* Spartanburg, S. C., base hospital, from New York, Lieut. W. P. LAW, Westmoreland.

*To Camp Wheeler,* Macon, Ga., for duty, from Fort Oglethorpe, Lieut. C. T. RICHARDSON, Memphis.

*To Fort Oglethorpe* for instruction, Capts. S. MEEKER, Memphis; W. M. JOHNSON, Sparta; J. W. WALLACE, Watauga; Lieut. G. M. WAMPLER, South Pittsburgh.

*To Fort Ontario, N. Y.,* base hospital, from Fort Oglethorpe, Lieut. O. N. LATEN, Memphis.

*To Fort Riley* for instruction, Capt. S. R. TEACHOUT, Nashville.

*To Hoboken, N. J.,* base hospital, from Camp Crane, Capt. J. H. McSWAIN, Paris.

*To New Haven, Conn.,* Yale Army Laboratory School, for instruction, Lieut. C. L. DAVIDSON, Lexington.

*Honorably discharged,* Lieut. L. M. DYKES, Johnson City.

The following order has been revoked: *To Camp Upton, L. I., N. Y.,* for duty, from Camp Meigs, Lieut. W. V. PRUETT, Brownsville.

### Texas

*To Camp A. A. Humphreys,* Accotink, Va., for duty, from Eastern Department, Lieut. R. ATKINSON, Pleasanton.

*To Camp Beauregard,* Alexandria, La., for duty, from Camp Travis, Lieut. D. W. CARTER, Jr., Georgetown; from Southern Department, Major T. E. PENROSE, Marathon.

*To Camp Bowie,* Fort Worth, Texas, base hospital, from Camp MacArthur, Capt. R. D. GIST, Amarillo. For duty, from Southern Department, Capts. T. R. BURNETT, Carrollton; F. F. FOWLER, Round Rock.

*To Camp Dix,* Wrightstown, N. J., as orthopedic surgeon, from Walter Reed General Hospital, Lieut. C. F. FOWLER, Austin.

*To Camp Dodge,* Des Moines, Ia., for duty, from Central Department, Major C. R. BYARS, Brownsville.

*To Camp Forrest,* Chickamauga Park, Ga., for duty, from Fort Oglethorpe, Capt. D. E. MONROE, Cameron.

*To Camp Las Casas,* San Juan, Porto Rico, base hospital, from Fort McPherson, Lieut. E. L. LAWRENCE, Thorndale.

*To Camp Meade,* Admiral, Md., for duty, from Fort Oglethorpe, Capt. J. S. MICHAEL, Lieuts. A. J. MYNATT, Houston; J. R. MURCHISON, Marshall; from Lakewood, Lieut. H. D. WHITTINGTON, Eastland.

*To Camp Pike,* Little Rock, Ark., base hospital, Lieut. H. D. HARLAN, Beaumont.

*To Camp Sherman,* Chillicothe, Ohio, base hospital, from Camp Dodge, Lieut. L. B. KLINE, Houston.

*To Camp Upton, L. I., N. Y.,* base hospital, from Fort McHenry, Lieut. W. R. JOHNSON, Snyder. For duty, from Camp MacArthur, Major S. NORMAN, Texas City.

*To Camp Wadsworth,* Spartanburg, S. C., for duty, from Camp Greene, Capt. F. D. SHEPHERD, Byers.

*To Corpus Christi, Texas,* for duty, Lieuts. T. W. GRACE, El Paso; J. D. CARROLL, Uvolde.

*To Fort Des Moines, Ia.,* base hospital, from Camp Shelby, Capt. H. H. OGILVIE, San Antonio.

*To Fort McHenry, Md.,* base hospital, from Camp Devens, Lieut. M. O. REA, Pottsville.

*To Fort Oglethorpe* for instruction, Capts. J. M. F. GILL, Austin; J. A. HARDY, El Paso; R. F. SAUNDERS, I. A. WITHERS, Fort Worth; A. P. HOWARD, Houston; Lieuts. A. H. GALLOWAY, Laneville; E. D. RICE, Tyler; H. E. HOKE, Waco; W. C. TENERY, Waxahachie; from Camp Bowie, Lieut. E. W. JONES, Wellington; from Camp Logan, Capt. W. P. BARTON, Overton; from duty as a private, Lieut. W. L. ASKEW, Amarillo.

*To Fort Riley* for instruction, Lieuts. P. C. PLUENNEKE, Cranfills Gap; E. K. ARMISTEAD, El Paso; L. C. BARRETT, Garner; J. B. KNIGHT, Meridian; J. H. McCOY, Tahoka; S. J. PATE, Woodville.

*To Fort Sam Houston, Texas,* base hospital, Capt. S. J. WILSON, Fort Worth.

*To Fort Worth, Texas,* for duty, Lieut. J. W. ELLIS, Lampasas; from Fort McIntosh, Lieut. W. H. COOLEY, Santo.

*To Hoboken, N. J.,* base hospital, from Camp Crane, Lieut. J. W. BALKE, Rosenberg; from Cape May, Lieut. J. E. QUAY, Waco.

*To New Haven, Conn.,* for duty, from Camp MacArthur, Lieut. A. J. STREIT, Marlin. Yale Army Laboratory School, for duty, from Fort Leavenworth, Capt. W. F. THOMSON, Beaumont. For instruction, Lieuts. J. D. MARTIN, Call; C. N. HENDRY, Galveston.

*To Newport News, Va.,* for duty, from Camp Wadsworth, Lieut. R. L. DINWIDDLE, San Antonio.

*To Princeton, N. Y.,* Princeton University, for duty, Capt. F. E. PRESTLEY, Galveston.

*To Washington Barracks,* Washington, D. C., for duty, from Army Medical School, Lieut. E. D. MILLS, Galveston.

*To Waynesville, N. C.,* for observation and treatment, from Arcadia, Lieut. J. W. REID, Maysfield.

*To report to the commanding general,* Southern Department, for assignment to duty, Lieut. J. L. BORDEN, Victoria.

*To Rockefeller Institute* for instruction in the treatment of infected wounds, and on completion *to his proper station,* from Camp Greene, Lieut. C. C. CLEVELAND, Hamilton.

The following order has been revoked: *To Fort Oglethorpe* for instruction, from Washington, Lieut. J. W. GOODE, San Antonio.

### Utah

*To Camp Custer,* Battle Creek, Mich., for duty, from Central Department, Capt. R. T. MERRILL, Smithfield.

*To Camp Fremont,* Palo Alto, Calif., base hospital, Capt. A. R. IRVINE, Salt Lake City.

*To Fort Douglas, Utah,* for duty, from Western Department, Capt. G. C. EMERY, Holliday.

*To Fort Oglethorpe* for instruction, Lieut. G. J. FIELD, Salt Lake City.

*To Fort Riley* for instruction, Lieuts. C. E. HENNEBERGER, Bingham Canyon; E. A. WEYMULLER, Geneva; B. C. MacNEIL, White Rocks.

### Vermont

*To Camp Crane,* Allentown, Pa., for duty, from Camp Gordon, Lieut. J. P. TIERNEY, St. Johnsbury.

*To Camp Devens,* Ayer, Mass., base hospital, Capt. O. V. HEFFLON, Wardsboro.

*To Fort McPherson, Ga.,* for duty, from Camp Kearney, Capt. S. M. BUNKER, Burlington.

*To Fort Oglethorpe* for instruction, Capt. J. W. COURTNEY, Burlington; Lieut. E. N. BIBBY, Craftsbury.

*To New Haven, Conn.,* Yale Army Laboratory School, for instruction, Capt. G. H. PARMENTER, Montpelier; from Fort Leavenworth, Lieut. A. L. FOGG, Underhill.

### Virginia

*To Camp Abraham Eustis,* Lee Hall, Va., camp hospital, from Camp Lee, Major P. C. RILEY, Markham.

*To Camp Custer,* Battle Creek, Mich., for duty, from Mineola, Major H. C. Mallory, Greenbackville.

*To Camp Forrest,* Chickamauga Park, Ga., for duty, from Eastern Department, Capt. H. J. HAGAN, Roanoke.

*To Camp Pike,* Little Rock, Ark., for duty, from Camp Logan, Lieut. E. M. HICKS, Roanoke.

*To Fort McHenry, Md.,* base hospital, from Camp Greene, Lieut. J. O. MUNDY, Jr., Raccoon Ford.

*To Fort Oglethorpe* for instruction, Capt. A. L. WILSON, Lynchburg; Lieuts. C. J. DEVINE, Lexington; E. P. KENNEDY, Richmond; R. R. NEVITTE, Temperanceville.

*To Fort Ontario, N. Y.,* base hospital, from Fort Oglethorpe, Lieut. R. G. WIATT, Richmond.

*To Hampton, Va.,* for duty, from Fort Worth, Major A. G. COUMBE, Vienna.

*To Hoboken, N. J.,* base hospital, from Fort Oglethorpe, Lieut. P. E. TUCKER, Buckingham.

*To Memphis, Tenn.,* Park Field, for duty, from Camp Sevier, Capt. S. E. BROWN, Norfolk.

*To New Haven, Conn.,* Yale Army Laboratory School, for instruction, Lieut. C. H. IDEN, Berryville.

*To Philadelphia, Pa.,* for duty, from Northwestern Department, Capt. J. W. H. POLLARD, Lexington.

*To Syracuse, N. Y.,* as orthopedic surgeon, from Camp Pike, Capt. H. FLETCHER, Fairfax.

*To Waynesville, N. C.,* for duty, from New Haven, Lieut. J. L. STRINGFELLOW, Norfolk.

### Washington

*To Camp Abraham Eustis,* Lee Hall, Va., sanitary personnel, Capt. F. H. COLLINS, Goldendale.

*To Camp Bowie,* Fort Worth, Tex., for duty, from Western Department, Capt. J. A. MAPES, Seattle.

*To Camp Crane,* Allentown, Pa., for duty, from Camp Lewis, Lieut. H. D. JONES, Tacoma.

*To Camp Dodge,* Des Moines, Ia., for duty, from Fort Thomas, Major R. W. NEWTON, Fort George Wright.

*To Camp Harry L. Jones,* Douglas, Ariz., for duty, from Portland, Ore., Lieuts. J. HIETT, Metaline Falls; C. Y. LAPIDENSKY, Seattle.

*To Camp Lewis,* American Lake, Wash., base hospital, Capts. J. R. BOOTH, A. JORDAN, Seattle; Lieuts. W. L. JACKSON, Burlington; J. L. HARRIS, Pullman; A. W. WISE, Wellpinit. For duty, from Western Department, Lieut. C. E. MONTGOMERY, Walla Walla.

*To Camp Logan,* Houston, Tex., base hospital, from Camp Cody, Capt. R. T. BURKE, North Bend.

*To Camp MacArthur*, Waco, Tex., for duty, from Western Department, Capts. W. H. PAYNE, Fort Worden; A. E. HENRY, Seattle; N. E. ROBERTS, Olympia; H. W. SHRYOCK, Sumas; C. C. WILCOX, Vancouver.

*To Camp Travis*, Fort Sam Houston, Tex., for duty, from Fort Riley, Lieut. F. W. WICHMAN, Tenino.

*To Camp Wheeler*, Macon, Ga., base hospital, from Fort Monroe, Capt. H. G. WILLARD, Tacoma.

*To Fort Des Moines*, Iowa, base hospital, from Camp Lewis, Capt. E. C. WHEELER, Tacoma.

*To Fort Ontario, N. Y.*, base hospital, from Camp Lewis, Capt. A. H PEACOCK, Seattle; from Jefferson Barracks, Lieut G. I. HURLEY, Hoquiam.

*To Fort Riley* for instruction, Capts. F. M. CROSBY, Kennewick; C. E. KEELER, Yakima; Lieut. C. E. GREASON, Skykomish.

*To Newport News, Va.*, for duty, from Waynesville, Capt. K. WINSLOW, Seattle.

*To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to his proper station*, from Camp Custer, Capt. J. M. HENDERSON, Seattle.

*To San Francisco, Calif.*, Letterman General Hospital, for duty, Capts. E. E. BECKETT, F. N. CHESSMAN, Seattle.

*To Williamsbridge, N. Y.*, for observation and treatment from Hoboken, Lieut. W. J. BOONE, North Yakima.

*Honorably discharged* on account of physical disability incurred in line of duty, Capt. F. L. WOOD, Lynden.

### West Virginia

*To Camp Gordon*, Atlanta, Ga., base hospital. from Fort McPherson, Lieut. C. M. TRUSCHEL, Wheeling.

*To Camp Lee*, Petersburg, Va., base hospital, Capt. B. L. TRAYNHAM, Sweet Springs.

*To Camp Logan*, Houston, Tex., base hospital, from From Fort Riley, Capt. O. D. BARKER, Parkersburg.

*To Camp Meigs*, Washington, D. C., for duty, Capt. C. N. BROWN, Elizabeth.

*To Camp Pike*, Little Rock, Ark., for duty, from Camp Shelby, Capt. L. P. JONES, Pennsboro; from Fort Oglethorpe, Capt. E. McELFRESH, Point Pleasant.

*To Camp Sheridan*, Montgomery, Ala., base hospital, from Camp Shelby, Lieut, G. C. PATTON, Harrisville.

*To Camp Wadsworth*, Spartanburg, S. C., for duty, from Fort Oglethorpe, Lieut. I. M. DEER, Henford.

*To Fort Oglethorpe* for instruction, Capt. P. W. McCLUNG, Elizabeth; Lieuts. T. L. HARRIS, Parkersburg; H. A. WHISLER, Wallace; A. L. COYLE, C. J. RYAN, Wheeling; from Camp McClellan, Capt. W. W. ORR, Worthington.

*To Fort Screven, Ga.*, for temporary duty, Lieut. H. B. COPELAND, Wheeling.

*To report to the commanding general*, base hospital, Southern Department, from Camp Travis, Lieut. T. E. VASS, Bluefield.

### Wisconsin

*To Army Medical School* for instruction, and on completion *to Fort Oglethorpe*, from Chicago, Capt. E. L. BOLTON, Chilton.

*To Camp Devens*, Ayer, Mass., base hospital, from Camp Custer, Capt. G. SENN, Green Bay; from Camp Sherman, Capt. S. W. DOOLITTLE, Lancaster.

*To Camp Dodge*, Des Moines, Iowa, for duty, from Fort Brady, Capt. G. R. RANDALL, Milwaukee.

*To Camp Grant*, Rockford, Ill., base hospital, Lieuts. J. T. KLEIN, H. J. KUHN, Milwaukee. For duty, from Fort Riley, Lieut. E. N. PFEFFER, Milwaukee.

*To Camp Lee*, Petersburg, Va., with the board examining the troops for cardiovascular diseases, from Lakewood, Lieut. E. S. GATTERDAM, La Crosse.

*To Camp MacArthur*, Waco, Tex., for duty, from Fort Oglethorpe, Lieut. C. M. SONNENBURG, Sheboygan.

*To Camp Meade*, Admiral, Md., base hospital, from New York, Lieut. C. C. BIRKELO, Rosholt.

*To Camp Pike*, Little Rock, Ark., for duty, Capt. A. L. C. BORCHARDT, New London; from Camp Zachary Taylor, Lieut. C. B. HAKE, Milwaukee.

*To Fort McHenry, Md.*, base hospital, from Camp Dix, Lieut E. R. F. MURPHY, Antigo.

*To Fort Oglethorpe*, as instructors, from Fort Riley, Capt. F. J. WOODHEAD, Merton; Lieut. E. I. MOQUIN, Fairwater. For instruction, Capt. J. W. POWERS, Burling.on; Lieuts. E. K. THOMPSON, Cudahy; from duty as a private, Lieut. A. C. NUGENT, Milwaukee.

*To Fort Ontario, N. Y.*, base hospital, from New York, Lieut. T. F. LAUGHLIN, Winneconne.

*To Fort Riley* for instruction, Lieuts. R. L. MacCORMACK, Alma Center; J. M. MECUM, Bagley; J. E. TWOHIG, Fond du Lac; J. ROSHOLT, LaCrosse; P. M. ROSS, E. A. SCHOLTER, W. A. SICKELS, Milwaukee.

*To New Haven, Conn.*, Yale Army Laborataory School, for duty, Lieut. F. M. HARRIS, Fond du Lac.

*To Newport News, Va.*, for duty, from Camp Wadsworth, Lieut. E. G. LINKMAN, Milwaukee; from Fort Oglethorpe, Lieut. G. G. WALLCHLAEGER, Milwaukee.

*To report to the commanding general*, Central Department, for assignment to duty, Capts. E. J. PHELPS, Elderon; F. WALTERS, Stevens Point; W. E. GROUND, Superior.

*To Rochester, Minn.*, Mayo Clinic, for instruction, and on completion *to Jefferson Barracks*, Lieut. F. H. RUSSELL, Neenah.

*To Rockefeller Institute* for instruction in laboratory work, and on completion *to Army Medical School*, for duty, Capt. F. A. McJUNKIN, Milwaukee. For instruction in the treatment of infected wounds, and on completion *to his proper station*, from Camp Dix, Lieut. T. C. H. ABELMANN, Watertown.

The following order has been revoked: *To Washington, D. C.*, American University, for duty, from Fort Oglethorpe, Lieut. O. W. C. MAERCKLEIN, Wanwatose.

### Wyoming

*To Camp Dodge*, Des Moines, Iowa, for duty, from Western Department, Lieut. N. C. GEIS, Casper.

*To Camp Sevier*, Greenville, S. C., base hospital, from New York, Lieut. A. H. BENSON, Sheridan.

*To Fort Riley* for instruction, Lieut. J. D. LEWELLEN, Powell.

# *Medical News*

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

## CALIFORNIA

**Personal.**—Dr. Richard S. Anthony, Los Gatos, has been appointed for the medical staff of the Red Chevron Society, an organization to identify all men unable to enter active service and to hold them during the period of the war in organization to render to the country whatever assistance they may be able to render as volunteers.——Dr. Arthur Hieronymus, city physician and head of the health department of Alameda, was operated on at the Alameda Sanitarium, July 28, and is reported to be doing well.

**New Tuberculosis Hospital.**—A new hospital for diseases of the lungs has just been completed on a site overlooking the Mission Valley, near San Diego, at a cost of $35,000. The institution will house forty-eight patients. While the building was started with $24,000 bequeathed by Mr. Vauclain, to be used for tent houses for consumptives, the trustees and the county supervisor contend that the purpose of the giver would best be served by turning over the fund to the County Tuberculosis Hospital building. On account of the conflict of opinion between the Anti-Tuberculosis Society and the county supervisor, this matter will be settled by the decision of the judge of the superior court.

## ILLINOIS

**Typhoid Fever.**—One hundred and thirty-five cases of typhoid fever have been reported in Moline.

**Infantile Paralysis.**—The second case of infantile paralysis in Edwardsville this year was reported, July 28.

**Personal.**—At the international convention of the Catholic Order of Foresters, held in Duluth, July 29, Dr. Joseph P. Smyth, Chicago, was elected high medical examiner.——Dr. Henry I. Wilson, Oak Forest, has been appointed health officer of Racine.

**Farewell to Medical Officers.**—The Sangamon County Medical Society gave a farewell dinner at the Sangamon Club, July 29, in honor of Drs. John F. Deal, A. G. Aschauer, Charles L. Colby and Charles L. Patton, who have accepted commissions in the Medical Reserve Corps, U. S. Army, and have been ordered to active duty. Each of the guests of honor was presented with a remembrance from the society. The presentation speeches were made by Drs. George N. Kreider, Lewis C. Taylor and Frank P. Norbury, all of Springfield.

### Chicago

**McArthur Unit Safely Landed.**—The Base Hospital Unit No. 14, St. Luke's Unit, was announced, August 2, to have been safely landed in Europe. Capt. Lawrence H. Mayers, M. R. C., U. S. Army, is director of the unit.

## IOWA

**Medical Student Drowned.**—John L. Cannon, a senior medical student in the State University of Iowa, Iowa City, was drowned in the Cedar River, near the lower Palisades, July 28.

**Personal.**—Dr. Edward C. Rosenow, who went from his home in Rochester, Minn., to Dubuque, in response to the appeal at the time of the outbreak of infantile paralysis in the latter city, returned home, July 25.——Dr. Fred J. Jarvis, Oskaloosa, suffered the fracture of a collar bone and other injuries in an automobile accident near Fremont.

**Quarantine Lifted at Dubuque.**—August 3, the quarantine that was placed on Dubuque a month before on account of the prevalence of infantile paralysis was raised by the state board of health. No new cases have been reported, and the number of recoveries is steadily increasing.——Out of seventy-one cases of paralysis reported to the state board of health up to July 22, there have been only nine deaths.

## LOUISIANA

**Personal.**—Dr. Jerome E. Landry has been appointed house surgeon of the Charity Hospital, New Orleans, succeeding Dr. Hiram W. Kostmayer, resigned to accept a position with the Illinois Central Hospital.

**New District Officers.**—At the annual meeting of the Fifth District Medical Society held in Monroe, the following officers were elected: president, Dr. James B. Vaughan, Collinston; vice presidents, Drs. Irby B. May, Columbia; Oliver H. Thompson, Marion, and Victor F. Carey, Downsville, and secretary-treasurer, Dr. James Q. Graves, Monroe.

## MARYLAND

**Personal.**—Dr. Howard Bratton, Elkton, has been elected vice president of the Association of Medical Societies of the Eastern Shores of Maryland, Virginia and Delaware.

## MINNESOTA

**Trachoma in Itasca County.**—As the result of a trachoma investigation recently made by federal government officials, and the state health authorities in Itasca County, thirty-eight cases have been found; seven in white people and thirty-one in Indians.

**Guilty of Espionage.**—"Dr." Christian P. Neumann, Princeton, is said to have been found guilty on three counts of violation of the espionage act and to have been sentenced by Judge Page Morris to four years imprisonment in the Leavenworth Penitentiary.

**Personal.**—Dr. Pearl M. Hall, formerly health commissioner of Minneapolis, was formally installed as superintendent of the State Tuberculosis Sanatorium, Walker, July 30 and 31.——Dr. Carl J. Holman has been appointed health commissioner of Mankato, succeeding Dr. Austin V. Denman, who has resigned to enter the military service.——Dr. Herbert O. Collins, for nine years superintendent of the Minneapolis City Hospital, has accepted the superintendency of the Winnipeg General Hospital, and will assume charge, September 1. Dr. Harry A. Britton has been appointed acting superintendent of the Minneapolis City Hospital, succeeding Dr. Collins.

## MISSOURI

**New Health Publication.**—St. Joseph Health Department has begun the publication of a monthly bulletin for distribution among the citizens to inform the people about health conditions. Dr. Hasbrouck De Lamater, city health officer, will edit the publication.

**Physician Fined.**—Dr. W. D. Smith, Kansas City, who was arrested on the charge of the illegal sale of narcotics, is said to have been fined $500, July 29, by Justice Charles H. H. Clark. Seven men and three women drug addicts who were arrested and held as witnesses against Dr. Smith were fined $50 each and sent to the General Hospital.

**Health Association Officers.**—At the meeting for organization of the Missouri State Health Association in St. Louis, July 22, Dr. Hasbrouck De Lamater, St. Joseph, was elected president; Dr. George H. Jones, Jefferson City, secretary of the state board of health, secretary, and Drs. E. H. Bullock, Kansas City, and C. A. Jones, St. Louis, and Messrs. E. H. Smith, Springfield; Robert B. Tyler, Joplin, and Frank L. McCormick, Moberly, directors.

**Personal.**—Dr. Arthur R. McComas, Sturgeon, councilor of the ninth district has been called into active service as captain, M. R. C., U. S. Army. July 11, a farewell dinner was given Captain McComas.——Dr. Franklin E. Murphy, Kansas City, councilor of the thirteenth district, has been appointed chairman of the judicial council and the executive committee of the Missouri State Medical Association to fill the vacancy caused by Dr. McComas being called into active service.

**State Health Board Appointments.**—Governor Gardner has appointed Dr. Andrew W. McAlester of Columbia a member of the state board of health to take the place of Dr. Joseph W. Ferguson, St. Joseph, who has joined the Medical Reserve Corps, U. S. Army. The governor also reappointed Dr. Emmett P. North of St. Louis, Dr. Thomas A. Son of Bonne Terre, Dr. T. Hurley Wilcoxen of Bowling Green, whose terms expired, July 1. The other members of the board are: Drs. William A. Clark, Jefferson City; Tolman W. Cotton, VanBuren and George H. Jones, Jefferson City, secretary of the board.

## NEBRASKA

**Personal.**—Drs. Francis and Emma Boose Tucker, Falls City, have arrived from Tehchow Tung, China, where they have been for seven years as medical missionaries.——Dr. Clarence B. Foltz has resigned as police surgeon of Omaha.

## NEW YORK

### New York City

**More Ambulances for Women's Service.**—The National League for Women's Service which is assisting the Surgeon-General in the removal of wounded men from the transports to the hospitals has been presented with four additional ambulances, valued at $10,250, and funds for their maintenance for one year by the Cloak and Suit Trade. This makes eight ambulances now being operated by the motor corps of the league.

**Women Doctors Need Help.**—Dr. Barbara Hunt, Bangor, Me., director of the Women's Hospital No. 1 in France, has cabled that there is urgent need for women physicians in connection with the work of that hospital. The hospital has twenty-five beds for military patients and twenty-five beds for civilian patients, and is establishing dispensaries in nearby towns and villages. In this enterprise it is working in cooperation with the American Committee for Devastated France.

**Red Cross Chapter Needs Physicians.**—The New York Chapter of the American Red Cross has asked for additional physicians to offer their services in connection with the work performed by the Red Cross in providing medical attention to the families of soldiers and sailors. The number of such cases being treated each month has been steadily increasing, and the number of physicians offering their services has been decreasing. The need for additional physicians for this work is urgent.

**Club for Red Cross Nurses.**—The New York Chapter of the American Red Cross is fitting up a club house at 129 East Nineteenth Street, Manhattan, for the accommodation of nurses passing through the city on their way to the front. The house will be ready to receive guests about September 1. At first there will be accommodations for only twelve nurses, but provision will soon be made for a larger number. This house was called for by Col. James M. Kennedy of the Medical Corps, who is surgeon of the embarkation service of the port of New York.

**Personal.**—Dr. Lucius P. Brown, who, following an investigation of the health department by the Hylan administration, was tried on charges of neglect of duty and acquitted, has been unanimously reinstated as director of the bureau of foods and drugs of the New York Health Department.——Dr. Timothy D. Lehane, who for fifteen years was a coroner's physician, has been appointed police surgeon for the thirteenth and fourteenth districts.——Dr. Samuel P. Swetnick, Brooklyn, while bathing at Rockaway Beach, August 2, was carried out by a strong undertow and narrowly escaped drowning.——Dr. Patrick J. Murray has been appointed chief surgeon of the police department of Brooklyn, succeeding Dr. Edwin E. Higgins, who has resigned to enter the military service.

## OHIO

**Sellenings Goes to Italy.**—Dr. Oscar H. Sellenings, Columbus, who was recently placed in charge of the work of the American Red Cross for the children of Marseilles, France, has been made head of the temporary commission sent by the American Red Cross to Italy.

**New Hospital to Help in Tuberculosis Fight.**—Ohio's seventh district tuberculosis hospital has been provided for by action of the commissioners of Wood, Hancock, Seneca and Crawford counties, appropriating $100,000 jointly for the establishment of such an institution, the state department of health announced recently. The site for the hospital will be chosen later. Five district hospitals are now in operation and provision for a sixth one has been made by Ottawa, Sandusky, Erie and Lorain counties. There are three county hospitals, established under previous laws, and two municipal institutions. In all these institutions provide for thirty-five of the eighty-eight counties.

**More Efficient Reports of Venereal Disease.**—The former regulations for the reporting of venereal disease in effect prior to July 1, were less than 3 per cent efficient. As a result of the new regulations a great increase in reported cases is expected. If the ratio which prevails throughout the United States prevailed in Ohio, there were about 375,000 cases of venereal disease during these three years, 1915-1917, yet during these three years less than 8,500 cases were reported.

"The old regulations, which did not require the name or the source of infection, were valuable only for the compila-

tion of statistics. The new regulations, now in effect, provide a practical means of obtaining detailed information as to venereal disease prevalence and as to vice conditions, which will be immediately useful in obtaining the control over these diseases which is just now such a necessary military measure."

### Cincinnati

**New Board of Health.**—Mayor Galvin reappointed, as members of the Cincinnati Board of Health, July 21, Dr. George A. Fackler for a term of ten years; Dr. E. Gustav Zinke for eight years; Samuel Prost for six years; Dr. Edward W. Walker for four years, and A. Clifford Shinkel for two years. Of these appointees, Drs. Fackler, Walker and Mr. Shinkel were originally appointed in 1908. Dr. John H. Landis, now health officer of Cincinnati, was a fourth member of the original board.

**Personal.**—Health Officer Dr. John H. Landis, who has been critically ill at Christ Hospital, is reported to be convalescent.——Capt. H. Kennon Dunham, M. R. C., U. S. Army, on duty at the U. S. Hospital No. 17, Markleton, Pa., suffered a fracture of the leg and other injuries when his automobile overturned near Frostburg, Md., recently.——Dr. William H. Peters has been made acting health officer of Cincinnati, pending the recovery of Dr. Landis.——Drs. James W. Rowe and Samuel Iglauer have been granted leaves of absence from the staff of the Cincinnati General Hospital for the period of the war.

## PENNSYLVANIA

**Personal.**—Dr. David Nathan, Norristown, has been commissioned captain in the Canadian Army Medical Corps.——Dr. James C. Lyons, Chester, is under treatment in the Jefferson Hospital, Philadelphia.

### Philadelphia

**Personal.**—Drs. Florence and Dorothy Child are caring for French children at the hospital at Evian.

**A New Course for Doctors' Aids.**—A new course for technicians under the direct supervision of Dr. Courtland Y. White, city bacteriologist and pathologist to the Episcopal Hospital and the Philadelphia Hospital for Contagious Diseases, will be opened September 4. The course will be conducted at the institutions with which Dr. White is connected. The course is open to women, but a high school education or its equivalent is required. Among the things which they study are examination of material from wounds and various other secretions for diagnosis; the preparation of culture mediums, serums and antitoxin; the study of bacteria, and the preparation and sectioning of pathologic tissue. Six hours a day for five days a week are required at the hospital. The department of public health charities through the Pennsylvania Department of the Council of National Defense offers the course.

## TEXAS

**Allowance for Antimalarial Work.**—Dr. James G. Townsend, U. S. P. H. S., Fort Worth, has been informed that the government will allow an additional $8,000 for antimalarial work in this zone.

**State Leper Colony.**—It is announced that the State Leper Colony may be located on the Guadalupe River, about 22 miles northwest of New Braunfels, Comal County. The abstract of the title of 333 acres of land has been submitted to the attorney-general by Dr. William B. Collins, Austin, the tract having been offered to the state for a leper colony.

**Personal.**—The mayor of Houston has appointed Surg. John M. Holt, U. S. P. H. S., city health officer for the period of the war with the approval of the Surgeon-General. Surgeon Holt's proper station is Cleveland.——Dr. Thomas B. Fisher, Dallas, has been appointed medical director of the Great Southern Life Insurance Company, succeeding Dr. John H. Florence, Houston, resigned; Dr. William E. Crow, Dallas, has been made assistant medical director.——A public health committee has been appointed for Belle County with Dr. John S. McCelvey, Temple, chairman, and Dr. Taylor Hudson, Belton, vice chairman. Drs. Ace H. Alsup, Little River, Olin F. Gober, Temple, and W. M. W. Splawn, Belton, are the other members of the committee, which will have charge of all matters relative to public health conservation.

## WISCONSIN

**Endowment Fund for Marquette.**—The latest report indicates that Marquette University has raised $450,448 toward the $1,000,000 endowment fund for its medical school, leaving $216,000 still to be raised. The university is to raise two thirds of a million to receive the other one third which was offered by the Carnegie Foundation for the Advancement of Teaching.

## CANADA

**Pensions.**—Up to and including May 31, 1918, the Canadian Pensions' Board had awarded 34,879 pensions, and 3,013 gratuities. The average number of pensions awarded daily is about 120. In some months over 3,000 have been issued.

**Sanitary Inspectors Meet.**—At the annual meeting of the Sanitary Inspectors Association of Western Canada, held in Winnipeg, July 19, Arthur Rigby, Winnipeg, was elected president; W. E. Stanley, Fort Williams, vice president for Western Ontario; D. Little, Winnipeg, for Manitoba; H. D. Mathias, Regina, for Saskatchewan; J. J. Dunn, Calgary, for Alberta, and F. S. Degray, Victoria, for British Columbia. Alexander Officer, Winnipeg, was reelected secretary-treasurer. The headquarters of the association will remain in Winnipeg.

**Unit Medical Directors.**—Canada has been divided into territorial units for the purpose of carrying out the work of the Invalided Soldiers' Commission. The director of the medical services, Lieut.-Col. F. McKelvey Bell, Ottawa, has appointed the following assistant medical directors: Maritime Provinces, Major Dugald Stewart, Bridgewater, N. S.; Ontario, Capt. Edward Ryan, Kingston, Ont.; Manitoba, Major Norman K. McIvor, Winnipeg, Man.; Saskatchewan, Capt. W. C. Arnold; Alberta, Major D. R. Johnson, and British Columbia, Major Arthur P. Proctor, Vancouver, B. C.

**Amendment to License Act.**—The Province of Ontario has recently amended its license act by granting wider powers to licensing boards in the control of preparations containing alcohol, including "patent medicines." Under this amendment license boards may submit samples of such preparations to the Provincial Board of Health for analysis and if that board finds that the medical ingredients are not sufficient to prevent the preparation from being consumed for the alcohol contained in them, their sale may be forbidden. All the well known "patent medicines" containing alcohol in any considerable proportion will be submitted for analysis.

**Advance in Pay for Medical Officers.**—Advice received from Ottawa states that the following rates of pay have been approved for professionally qualified officers of the Army Medical Corps, Canadian E. F., serving either in Canada or overseas. Colonel, $8 a day; lieutenant-colonel, $7; major, $5.50; captain, $4; lieutenant, $2; and in addition an officer of the Army Medical Corps will receive a field allowance at the same rate as in other branches of the service, and officers in command of any hospital or institution, in which the number of personnel employed together with the number of patients equals or exceeds 500, will receive command pay at the rate of $1 a day.

**Personal.**—Dr. Joseph A. Mathieu has recently returned from Europe and has located in Regina, Sask.——Major Ernest H. Young, Kingston, formerly in the insane hospital service in Ontario, but who has been overseas for two years, has returned to Canada, and has been appointed to take command of the Ontario Military Hospital at Coburg, Ont.——Dr. L. De Lotbiniere Harwood, Montreal, has been elected dean of the medical faculty of Laval University, Montreal, to succeed the late Dr. Emmanuel P. Lachapelle.——The Hon. Dr. Henri S. Beland, after serving three years in Germany as prisoner of war, has arrived home in Canada. It is his intention to return to the front in a medical capacity.——Capt. Morley E. Gorman, Postville, Ont., has been awarded the Military Cross.——Capt. Thomas Morrison, C. A. M. C., Hamilton, Ont., returned from overseas, has been appointed assistant director of medical services at Niagara Camp, Ontario.——Major Cluney MacPherson, St. Johns, director of military services in the Newfoundland Militia Department, has been made a C.M.G.——Dr. James C. Watt has been appointed an associate professor of anatomy at the University of Toronto, and Dr. W. G. Smith an associate in psychology.——Lieut.-Col. P. Walter H. McKeown, Toronto, who is now overseas, has been made a colonel, and is in command of the Kitchener Hospital, Brighton, England.——Dr. Duncan A. Carmichael, Oshawa, Ont., assistant superintendent of the Calydor Sanatorium, Gravenhurst, Ont., has accepted the superintendency of the Jordan Memorial Sanatorium, New Brunswick, succeeding Dr. David Townsend, River Glade, N. B.——Major John G. Fitzgerald of the provincial health laboratories, Toronto, is now acting as a pathologist in France.——Capt. Henry Crassweller, Windsor, Ont., in the R. A. M. C., is reported missing.

## GENERAL

**Tri-State Society Meeting.**—The third annual meeting of the Tri-State Medical Society will be held in Madison, Wis., August 19 to 22. Dr. William P. Peck, Madison, is president of the association.

**Missouri Valley Society to Meet.**—The thirty-first annual meeting of the Medical Society of Missouri Valley will be held in the Fontenelle Hotel, Omaha, September 19 and 20, under the presidency of Dr. Artemas I. MacKinnon, Lincoln.

**Bequests and Donations.**—The following bequests and Donations have recently been announced:

Anti-Tuberculosis League of Cincinnati, $2,257.47; Associated Charities, $2,000; Hospital Social Service, $150; Children's Clinic, $600, and Visiting Nurses' Association, $500, by the distribution of funds of the budget committee of the Council of Social Agencies of Cincinnati.

Marquette Medical Dispensary, Milwaukee, Wis., $33,000 by the will of Miss Helen Cudahy.

**National Dental Association.**—The twenty-second annual session of this association was held at the Auditorium Hotel, Chicago, Aug. 5-9, 1918.

At the first general meeting there was a symposium on the management of pulpless teeth, and up-to-date information was furnished on infections within the roots and periapical tissues. The relative and actual efficiency of medicaments for the sterilization of tooth structures was reviewed, and a report made on the efficiency of current methods employed for the sterilization of dental instruments and root filling materials. Laboratory investigations on the physical properties of root filling materials and the efficiency of root filling for blocking infection from sterile tooth structures were presented, and clinical data with reference to the efficiency of various root filling methods was furnished.

At the second general meeting the president, Col. W. H. G. Logan, discussed the dental profession's contribution to the present war. Major-Gen. William C. Gorgas delivered an address in which he pointed out some of the important changes that have been made in the Medical Department of the United States Army during the past four years. Brig.-Gen. Robert E. Noble followed with remarks on the plans of the Surgeon-General of the Army for maintaining the health of the soldiers. Col. Charles H. Mayo spoke on medical and surgical progress during the present war. Lieut.-Col. Horace D. Arnold, chairman of the Council on Medical Education of the American Medical Association, discussed the benefits to the medical and dental professions and schools from higher educational standards.

An interesting feature of the meeting was the presentation of a service flag to the National Dental Association by Dr. Donald M. Gallie, Chicago, which was accepted on behalf of the association by Major C. Victor Vignes of Louisiana. This flag showed that there are 5,981 dentists in the Dental Reserve Corps. Lieut. Vasile Stoica of the Roumanian Legation, Washington, D. C., recounted his experiences on the battle front as a soldier with the Roumanian Army. United States Senator William Borah delivered a patriotic address.

A luncheon was tendered to the former presidents of the association on the stage of the Auditorium Theater. Approximately 1,000 participated in this luncheon, at which speeches were made by Dr. Edwin T. Darby, Philadelphia; Dr. B. Holly Smith, Baltimore; Dr. Harvey J. Burkhart, New York, and Dr. Frank O. Hetrick, Ottawa, Kan., all ex-presidents of the association. They discussed the problems which confronted the dental profession in the year 1883 which led to the adoption of the present organization of the association and the benefits that have accrued as a result of this reorganization.

One of the outstanding features of this meeting was the oration by Dr. A. W. Thornton, Montreal, Canada, on "A Tribute to the Life Work of the Late G. V. Black." Following the oration of Dr. Thornton, members of the association went to Lincoln Park, where the Black Memorial exercises were held. Dr. Truman W. Brophy presented the Black Memorial to the Lincoln Park Board. The unveiling of the memorial was by the four granddaughters of the late Dr. Black. The memorial was accepted on behalf of the Lincoln Park Board by Mr. Bertram M. Winston. Dr. Thomas L. Gilmer, Chicago, who was intimately associated with Dr. Black for many years, cited some interesting reminiscences of this distinguished dentist.

The scientific work of the association was divided into seven sections. Many interesting papers were read before these sections on various topics which were freely discussed.

In the United States Army Dental School Section, under Lieut. William E. Henshaw, Lieut. C. R. Hollister and Lieut.-Col. J. H. Snapp, there was an interesting exhibit of charts and models used for teaching purposes at the schools for Army dental surgeons, located at Camp Greenleaf, Chickamauga Park and Fort Oglethorpe. Surgery of the jaw was profusely illustrated and demonstrated by models, based on the experience of surgeons at the front.

The meeting was a great success both from a social and scientific standpoint, and the attendance was the largest in the history of the association.

## FOREIGN

**Nordau Elected to Spanish Academy.**—The Academia de Medicina Real de Madrid has elected Dr. Max Nordau corresponding member. It will be remembered that he has been interned in Madrid since early in the war.

**Italy Taboos German Drugs.**—The Italian Medical Congress for Resistance, which met recently in Genoa, voted to urge its members to do everything possible to avoid the use of German drugs, chemicals and surgical instruments.

**Outings of French Children in Spain.—The** *Archives de médecine des enfants* mentions that a Spanish journal says that a committee has been formed at Barcelona to welcome fifty children from Paris at two nearby seashore resorts. The indignation against the German bombardments of women and children has inspired this manifestation of sympathy for *les petits Parisiens*, and as soon as the French-Spanish frontier is opened, two parties of twenty-five children each are to be sent to Spain.

**Epidemic Diseases.**—July 27, 111 cases and thirty-three suspected cases of Asiatic cholera were officially reported in Petrograd.——The Swiss government, July 31, ordered the Austrian frontier closed because of the reports of the prevalence of cholera.——Owing to the prevalence of Spanish grip in Rome, the municipality has forbidden performances at theaters, picture houses and music halls; concerts and church gatherings are forbidden until further orders; the penalty for infraction of these regulations will be $1,000, or imprisonment for three months.

**Deaths in the Profession Abroad.—J. Rapin,** formerly assistant of Bourget at Lausanne, lately of Payerne, aged 34.——**P. Delpech** of Paris, fatally poisoned while tending gassed soldiers.——**E. Paz y Gomez,** founder of the *Cronica Medico-Quirurgica* de Habana in 1874.——**J. Kollmann,** professor of anatomy at the University of Basel.——**G. Verriest,** formerly professor of internal pathology at the University of Louvain, president of the Belgian Académie de médecine and of the international congress of neurology at Brussels in 1903.——**E. Bonnaire,** agrégé professor of obstetrics at the University of Paris, and one of the eight members of the editorial staff of the *Presse médicale*, aged 60.——**Dr. Grasset,** professor of general pathology and therapeutics at the University of Montpellier, aged 69.——**Dr. J. E. Iranzo,** professor of clinical medicine at the University of Zaragoza, Spain, and president of the Academia de Medicina y Cirugia.——**J B. Régis,** the noted alienist, professor of psychiatry at the University of Bordeaux, one of the pioneers in psychology, author of the classic "Précis de psychiatrie." Honors had been showered on him in France and abroad.

## SOUTH AND CENTRAL AMERICA, MEXICO AND WEST INDIES

**Warning Against Pseudomedical Conspiracy.**—The *Vida Nueva* of Havana warns physicians elsewhere in Cuba and the sick that persons coming to a city to consult a physician must be one their guard against being taken by unscrupulous hackmen to physicians other than those to whom they were sent.

**Personal.**—Dr. B. Saenz has been appointed professor of diseases of the skin and syphilis at the University of Havana. ——Drs. L. F. Rodriguez and J. A. Simpson and L. F. R. Molina were recently admitted to membership in the Academia de Ciencias at Havana. Dr. Simpson read a paper on hydrocyanic acid found in certain imported *frijoles.*

**Monument to Cruz.**—The members of the National Public Health Service of Brazil have erected a monument to Oswaldo Cruz on the grounds of the Public Health Building at Rio de Janeiro. The bronze portrait figure is seated in the professorial chair, with arms resting on a desk, in a peculiarly graceful and easy pose. The inscription reads: "A Oswaldo Cruz, Homenagem do pessoal da Directoria Geral de Saude Publica, 23-III-1903—19-VIII-1909," the dates marking the period of his most productive work, the eradication of yellow fever from Rio. The statue was unveiled with much ceremony recently in the presence of the highest officials of the country. The *Brazil Medico* of June 15 gives an illustration of the memorial.

## BUENOS AIRES LETTER

BUENOS AIRES, July 1, 1918.

### Prevention of Serum Sickness

Prof. J. Penna reported at the meeting of the Academia de Medicina, June 28, a method of warding off serum sickness by means of beef serum. His discovery of it was quite casual. He noticed in treating with normal beef serum 309 patients with anthrax, the almost complete absence of serum sickness or other disturbances from the serotherapy. No tendency to anything of the kind was noted except in 5 cases, that is, in 1.6 per cent. This result was confirmed in 40 cases of typhoid fever, injected with normal beef serum, none of the patients showing any signs of serum sickness. Encouraged by these results, Drs. Kraus and Penna, who together conducted this research, had antitetanus and antidiphtheria serums prepared with beef serum. The serums reached antitoxic values of 300 and 400 units within a short period. This was accomplished by using for the immunizing agents mixtures of diphtheria toxin and antitoxin neutral for guinea-pigs, or the toxoids of tetanus prepared with formol. These methods allowed the obtaining of serums of extremely high antitoxic value in the course of one or two months.

The antitoxic serums thus obtained against diphtheria and tetanus were injected in 38 cases of diphtheria (20 active cases and in 18 for passive immunization), without any symptoms of serum sickness in any instance. (These cases were in the Hospital Muñiz.) In the Children's Hospital, the injections were given to 9 children with diphtheria and to 32 as a preventive, and there were only 4 cases of transient urticaria. In 7 cases of tetanus, the antitetanus serum was injected in large doses, and there was only one case of urticaria. It is interesting to note also that 6 recovered of the 7 patients with established tetanus.

There were thus a total of 435 patients injected with beef serum and only 1.4 per cent. exhibited any signs of serum sickness. The next step was to determine whether beef serum was capable of warding off the by-effects of horse serum. For this purpose beef serum was injected in 20 patients who had previously been given an injection of horse diphtheria antitoxin, but serum sickness developed in 4, the usual proportion, 20 per cent., and there were 9 cases of urticaria, that is, in 45 per cent.

Then beef serum in amounts of from 100 to 700 c.c. were injected in 15 cases of typhoid, followed by injection of 10 or 30 c.c. of normal horse serum. No signs of serum sickness were apparent in any instance. The same absence of serum sickness was manifest when beef diphtheria antitoxin and horse diphtheria antitoxin were injected in 9 cases, with serum sickness in one the fifth day. One patient with bubonic plague was given an injection of 170 c.c. of beef serum and later 100 c.c. of horse serum; no signs of serum sickness became apparent. The total of all these cases is thus one instance of serum sickness in 24 cases, that is, in the proportion of 4.2 per cent. Then in a group of 11 cases, including 5 of diphtheria, 4 of typhoid and 2 of plague, injections were given of equal parts beef serum and horse serum, and serum sickness developed in 27.2 per cent. In another group of 20 patients, injections were made with both beef serum and horse serum, the former in the larger amounts, but serum sickness developed in 5 per cent.

These experiments apparently demonstrated that normal or antitoxic beef serum only exceptionally induces serum sickness. Used after horse serum, it has no prophylactic action against the latter. But it has a prophylactic action when injected before the horse serum. Mixed with the horse serum, with excess of the beef serum by at least one third, it materially reduces the accidents from serum treatment.

## PARIS LETTER

PARIS, July 4, 1918.

### Celebration of Fourth of July

All of France celebrated the American Independence Day. The homage of the French took expression in many ways. All the public schools and educational institutions of secondary and higher grades were closed.

At the American hospital at Neuilly, in which about 500 American and as many French wounded are being cared for, a solemn high mass was celebrated in the morning, and a sermon was preached in French and in English. Religious hymns and patriotic songs were sung by the wounded and by artistes. The exercises were opened by singing the Star Spangled Banner, and closed by singing the Marseillaise.

### The Rehabilitation of Disabled Soldiers

In a previous letter (THE JOURNAL, April 13, 1918, p. 1111) was described the evolution of the protheses which the war has forced the nations to provide for the *mutilés*. No less interesting is the evolution of the vocational education which is placed within reach of these men. A most remarkable change has been made.

#### COMMERCIAL PURSUITS

First of all, commercial work was given attention for several reasons: In the first place, no vocation seemed so attractive to the maimed men as sedentary work, such as accounting, office work, typewriting; second, for the school itself, the teaching of accounting, typewriting, etc., is tempting because it is not onerous and accomplishes a great deal for the effort expended. One teacher can group together a whole class of students, and the initial cost of starting a school and of maintenance are not high. But, gradually, it has become apparent that these positions, never commanding more than mediocre salaries, are likely henceforth to be even less remunerative, as the number of applicants for these positions will be large, especially from among the women. As a matter of fact, these office and administrative positions should be reserved for men who have lost an arm, especially those who have had a shoulder disarticulation.

#### INDUSTRIAL WORK

In industrial reeducation, such as is now practiced in France, preference is given to manual labor which the artisans can carry on in their village at home or in a shop of their own, and still conserve their independence. Thus the man is trained to be a shoemaker, harnessmaker, carpenter, wood turner, basketmaker, tailor, etc. This makes it possible for these men to return to where they came from, to their village, their family, where they should feel at home. It is regarded as important to refrain from uprooting the men from their former environment.

#### AGRICULTURAL WORK

A very old proverb says that "agriculture, like the Venus de Milo, is minus the arms" (*manque de bras*). Unfortunately, it is certain that after the war arms will be lacking more than ever, therefore, it is essential to return to the soil the men, of whom there never were enough, even before the war, and to seek to favor agricultural reeducation. It seems, at first, that the hard work in the field is not compatible with these mutilations. In reality, nothing is further from the truth. Dr. Boureau, whose work has been mentioned before, has shown that vocational prostheses are more easily adapted to the men who work in the fields than for any other workers. Why? Because the lost movements that must be supplied are less complicated than those needed for urban labor. Without a doubt, of all the maimed, the one-armed or one-handed men are the ones whose professional orientation is the most delicate to decide, because of the shortness of the stump. It suffices to supply an apparatus which ensheaths the stump, a "godet (cup) de travail" or a mobile screw hook which will enable these men to use agricultural implements readily—the spade, the fork, the scythe, the plow. On the other hand, resort may be had to another method of readaptation. Instead of fitting a prosthesis to the man, it is possible to adapt the machine or the agricultural implement so as to meet the demands of the *mutilés*, in other words, instead of adapting the men to the machines by "arms" or "*mains de travail*" (work-hands) why not, in view of the large number of *mutilés*, adapt the machines to their needs, replacing a pedal by a handle, or vice versa.

Dr. Boureau is of the opinion that the man who before entering on military service was a farmer and who lost his arm at some level so that he cannot make use of it, will find better employment and a more assured existence by returning to his former work, than by taking up work in the city. With an outfit consisting of five apparatus, not very expensive, supported by his previous aptitude, he should be able to render very satisfactory service, as much as his fellow worker who has two arms.

Various schools of reeducation, l'Union des colonies étrangères, l'Union des Syndicats agricoles du Sud-Est, la Société des Agriculteurs de France, and still other welfare agencies have taken up this work. This systematic training of the *mutilés* in up-to-date methods of farming will be fruitful further in educating their less advanced countrymen. They can diffuse rational methods of culture, exploit the small farm products, initiate various improvements in breeding and in the dairy and cheese business.

AGRICULTURAL REEDUCATION OF THOSE BLINDED BY WAR

Even the war blinded (*aveugles de guerre*) can be given agricultural reeducation Without doubt, at first, it appeared to be impossible to help the blind in this direction. Experience, however, has shown that this is not true. Among the tasks which these men can do are to bind sheaves, harvest beets, mow, take care of bees, take care of the garden and many others. It is far better to subject these men to vocational reeducation than to make them objects of maudlin sympathy. Nothing is more convincing than the results obtained in the farm run by the Trappists at Sept-Fons, in the département de l'Allier. The Association Valentin Haüy pour le bien des aveugles has secured for the Trappists the cooperation of a man who was an experienced farmer in Lorraine and for six years has been completely blind. Perseverance in his farm work has enabled this blind farmer to become much more skilful than was deemed possible for a blind man. This farmer has organized at Sept-Fons, the seeing attachés à l'Oeuvre et le trappiste, zouave aveugle de guerre, who, under his direction, are devoting themselves to the service of their comrades, those who before the war were landed proprietors, farmers or merely farm hands.

### Dr. Thayer Elected to Membership in the Academy of Medicine

July 2, the Académie de médecine elected Dr. William S. Thayer of Baltimore, Md., U. S. A., a foreign associate member. Four others, Dr. Benoit of Montreal, Dr. Bordet of Brussels, Dr. César Roux of Lausanne and Dr. Ehlers of Copenhagen were also considered, but failed to secure election.

### Deaths

Dr. Edouard Maurel, professor of experimental pathology in the Toulouse Faculty of Medicine, died at the age of 78. He had been a national corresponding member of the Académie de Médecine since 1911.

Dr. Jules Ehrmann of Nimes, a native of Alsace, a national associate member of the Académie de médecine, died June 29, aged 83, from angina pectoris. He was known because of his work on the diseases of the palate

DEATH OF DR. DUCHAUSSOY

Dr. Auguste Duchaussoy, formerly associate professor on the Paris Faculté de médecine, died, aged 91. He was founder and secretary general of the Association des Dames françaises, one of the three component societies of the French Red Cross. Thanks to him the ladies were called to aid in war welfare work. The Société française de secours aux blessés militaires was founded in 1864, but its membership consisted of men only. In 1879, Duchaussoy issued a stirring appeal and organized the Association des Dames françaises. In 1881, the Union des femmes de France was organized at his suggestion, and still later the Société française de secours aux blessés militaires decided to admit women to membership.

## LONDON LETTER

London, July 23, 1918.

### The Future of the Medical Profession

If those German politicians who, with more malice than intelligence prophesied the approaching downfall of the British Empire were to read our journals, they would be painfully surprised to find that we are so little impressed by the efforts of their country that we continue to occupy ourselves with all sorts of domestic problems just as in times of peace. The future of the medical profession is now being discussed with great vigor, as it is recognized that we are on the verge of important changes. Notwithstanding the war, the formation of a ministry of health cannot be long deferred, as the centralization and coordination of the many government departments and authorities which deal with the prevention and treatment of disease is regarded as necessary. The insurance act, whatever its defects, has come to stay and is only a stepping stone to a more complete state control of medicine which, however, is bound to encounter a good deal of professional resistance, as did the insurance act. The British Medical Association is in favor of a ministry of health to be carried out by members representing on an equal footing the preventive and clinical sides of medicine with whole-time medical officers in each administrative area. It proposes that in each local area the medical staff should be of the following classes: (1) exclusively for administration and inspection; (2) resident medical officers to institutions and those in charge of special clinics; (3) pathologists, and (4) those engaged in giving advice and treatment to individual persons otherwise than under Class 2. Class 1 should be whole-time salaried officers; Classes 2 and 3 should be salaried officers, either whole-time or part-time, while Class 4 should not be salaried officers, but should be remunerated either for actual items of work done or for the number of persons for whom they accept responsibility. There should be hospitals, clinics or treatment centers, and pathologic laboratories within each area, with possibilities of consultation open to all who are entitled to the advantages of the public scheme. Voluntary hospitals would be necessary and should be encouraged. Visiting practitioners and consultants at both public and voluntary hospitals should be paid for their services in proportion to the number of patients coming under the public scheme for whom they accept responsibility.

The Panel Medico-Political Union (an organization of the physicians who treat patients under the national insurance act) is in favor of a ministry of health but against any whole-time state medical service for physicians. It favors a large extension of hospitals and the formation of public clinics and treatment centers. The State Medical Service Association (an organization formed for the purpose of bringing about a state medical service) goes much further—to the extent of complete socialism. It advocates a state of clinical service, including physicians, specialists of all sorts, pathologists, dentists, midwives, and nurses who would give whole-time service, which should be free and open to all. In the *Lancet*, the president of the association, Dr. Benjamin Moore, gives the following reasons why the service should be free and open to all. 1. Health is of national importance, and likewise disease is a national danger. The health of the individual is consequently of national concern. 2. Health and not the purse is the factor determining the needs of the individual. Disease being no respecter of persons, science in dealing with its prevention and cure cannot afford to be so. 3. A service organized for the poor is bound to be unpopular and inefficient, even as the poor-law service has been in the past. 4. Modern methods of diagnosis and treatment are becoming so elaborate and costly that people of even considerable means are quite unable to afford them. 5. An enormous amount of disease remains undetected and untreated, as shown by medical inspection of schoolchildren and medical examination of recruits. 6. The service should be in a position to seek out disease in its beginnings and to watch over contacts in cases of infectious diseases, which is impossible under any system of private practice in which the physician has to await the call of the patient, who may be far advanced in illness before he thinks fit to send for him. In the same journal, Sir Bertrand Dawson, physician to the London Hospital, advocates a similar far-reaching scheme. He points out that there is an increasing necessity for team work. Investigations are becoming more and more technical and collective, and treatment is becoming increasingly specialized, with the result that the home is becoming less and less suitable for the sick. The insufficiency of the present organization denies to the physician the opportunities he should have for doing the best work. Hence he is apt to get disheartened and to deteriorate, as would a workman without the best tools or an adequate workshop. Organized equipment should be available to provide him with the means to help himself.

## *Marriages*

Lieut. Roy Lee Laird, M. R. C., U. S. Army, Spokane, Wash., on duty at Camp Greenleaf, Fort Oglethorpe, Ga., to Miss Ethel Paulison Minnard of Chattanooga, Tenn., May 25.

Lieut. Merrill Clary Sosman, M. R. C., U. S. Army, on duty at the Army Medical School, Washington, D. C., to Miss Arline Clark Adams of Chillicothe, Ohio, June 27.

Capt. Edwin Frederick Hirsch, M. R. C., U. S. Army, Chicago, on duty at Camp Grant, Rockford, Ill., to Miss Marian Sharp Lane of Beverly Hills, Chicago, August 3.

Capt. Robert Sixtus Berghoff, M. R. C., U. S. Army, Chicago, stationed at Camp Grant, Rockford, Ill., to Miss Mary Elizabeth Ford of Chicago, August 10.

Alvin Charles Tanner, Minneapolis, Minn., to Miss Edith R. Parent of Boston, in St. Paul, recently.

Leo Gerald Flannery, Philadelphia, to Miss Anna F. Sheehan of Chestnut Hill, July 29.

John Cloyd Souders to Miss Clara Traenkenschuh, both of Rock Island, Ill., July 22.

# Deaths

**Capt. Maximilian Joseph Herzog,** M. R. C., U. S. Army, Chicago; Medical College of Ohio, Cincinnati, 1890; aged 59; a Fellow of the American Medical Association; a pathologist of high rank; dean and professor of pathology, bacteriology and hygiene in Loyola University; who was commissioned captain in the Medical Reserve Corps, April 19, 1917, and honorably discharged for physical disability, April 24, 1918; author of a Textbook on General and Comparative Pathology; pathologist to the German and Maurice Porter hospitals; once president of the Chicago Pathological Society; in 1902-1903; for many years professor of pathology in the Chicago Polyclinic, and later director of the United States Government Laboratories, Manila, P. I.; director of laboratories and research at the Municipal Tuberculosis Sanatorium since 1916; died in that institution, August 9, from chronic interstitial nephritis.

**Capt. Samuel Cobb Norris,** M. R. C., U. S. Army, Anderson, Ind.; Miami Medical College, Cincinnati, 1894; aged 48; a Fellow of the American Medical Association; a specialist on diseases of the eye, ear, nose and throat; associate professor of Hygiene and Sanitary Science in Indiana University, Bloomington and Indianapolis; for several years city chemist; formerly editor of the Central State Medical Magazine; who was under orders to report for duty at Fort Oglethorpe, Ga., August 14; died at his home, August 4, from disease of the liver.

**Lieut.-Col. Clarence LeRoy Cole,** M. C., U. S. Army, San Antonio, Texas, Medical College, Topeka, 1903; aged 41; a Fellow of the American Medical Association; who entered the Army, May 10, 1905, and was in charge of the laboratory at Fort Sam Houston, Texas; who had recently been under treatment at the Walter Reed Hospital, Washington, D. C.; was found dead in his quarters, August 9, from a bullet wound of the head, self-inflicted, it is believed with suicidal intent, while suffering from mental depression.

**Charles Woodward Gaylord,** Branford, Conn.; Yale University, New Haven, Conn., 1872; aged 72; a Fellow of the American Medical Association; health officer and medical examiner (coroner), of the town and borough of Branford and of the town of North Branford; president of the board of trustees of the Blackstone Memorial Library; and a member of the board of education for many years; died in the New Haven Hospital, August 4, a short time after a surgical operation.

**Lieut. Guy Austin Tull,** M. R. C., U. S. Army, Kansas City, Mo.; on duty with the Three Hundred and Fifty-Third Infantry, Camp Funston, Kan.; Kansas Medical College, Topeka, 1895; aged 49; a Fellow of the American Medical Association; and of the American Academy of Medicine; once president of the Clay County (Kan.) Medical Society and surgeon for the Rock Island System; died at his home, July 13, from chronic interstitial nephritis

**Arthur Morrow,** Kalispell, Mont.; University of Edinburgh, Scotland, 1886; aged 54; a member and president of the Montana State Medical Association in 1917; once president of the Flathead County Medical Society; health officer of Flathead County; commandant of the State Soldiers Home, Columbia Falls; at one time instructor in the Halifax, N. S., Medical College; was found dead in bed at his home, August 1.

**Thaddeus M. Rohrer,** Quarryville, Pa.; Jefferson Medical College, 1881; aged 63; at one time a Fellow of the American Medical Associaiton; a member of the Medical Society of the State of Pennsylvania; for several years burgess of Quarryville; medical examiner of schools for the southern part of Lancaster County and of the borough of board of health; died in the Lancaster General Hospital, July 30.

**Joseph M. Creamer, Jr.,** New York City; Long Island College Hospital, Brooklyn; 1897; aged 48; a member of the Medical Society of the State of New York, and of the New York Branch of the American Urological Association; a member of the staff of Bellevue, St. Luke's and the Polyclinic hospitals; died at his summer home, Del Beach, N. J., July 28, from cerebral hemorrhage.

**Harry Walker,** Pawhuska, Okla.; Bellevue Hospital Medical College, 1884; aged 57; at one time a Fellow of the American Medical Association; a member of the Oklahoma State Medical Association; local surgeon of the Oil Fields and Santa Fe Railroad; for many years physician at the Osage Agency; died at his home, July 26.

**David Townsend McKinney,** Pittsburgh; University of Louisville, Ky., 1898; aged 43; a member of the Medical Society of the State of Pennsylvania; Acting Assistant Surgeon, U. S. Army, during the war with Spain; industrial surgeon on the relief force at the Westinghouse Electric and Manufacturing Company, East Pittsburgh; died in Pittsburgh, July 9, from angina pectoris.

**Samuel Calhoun Stremmel,** Macomb, Ill.; College of Physicians and Surgeons, Chicago, 1889; aged 55; a Fellow of the American Medical Association; surgeon in chief of the Marietta Phelps Hospital, Macomb; a member of the Macomb board of health for twenty years; died at his home, July 24, from carcinoma of the pancreas.

**Louis Falge,** Manitowoc, Wis.; Rush Medical College, 1887; aged 56; a Fellow of the American Medical Association; since 1908 coroner of Manitowoc County; a member of the county board of education since its organization; county physician at one time; died in the Manitowoc Hospital, August 4.

**John Jacob Edic,** Leavenworth, Kan.; Bellevue Hospital Medical College, 1867; aged 81; emeritus professor of principles and practice of medicine in the Kansas City (Mo.) Hahnemann Medical College; formerly president of the Homeopathic Medical Society of Kansas; died at his home, July 31.

**Clayton Crawford Davis,** Hillsboro, Texas; University of Alabama, Mobile, 1889; aged 59; a Fellow of the American Medical Association; a prominent surgeon of Central Texas; died in a sanatorium in Waco, Texas, July 31, from heart disease, a short time after an operation for removal of the tonsils.

**Chase L. Ferris,** Hamilton, Ohio; Medical College of Ohio, Cincinnati, 1903; aged 39; died at the home of his mother in Hamilton, July 27, from the effects of a bullet wound of the skull, self-inflicted, it is believed, with suicidal intent, while mentally irresponsible on account of despondency.

**Forbes James Munson,** Brooklyn; Long Island College Hospital, Brooklyn, 1897; aged 49; for more than twenty years a diagnostician of the Brooklyn Board of Health; assistant surgeon to the Bushwick Hospital; died at his home, July 27, from cerebral hemorrhage.

**Harry Dare Jerwick,** Hot Springs, Ark.; Tulane University, New Orleans, 1918; aged 24; an intern in Charity Hospital, New Orleans; and a member of the Enlisted Medical Reserve Corps, U. S. Army; died in Charity Hospital, July 16, from typhoid fever.

**Clarence W. Goss,** Lancaster, Ohio; Starling Medical College, Columbus, Ohio, 1889; aged 50; a Fellow of the American Medical Association; physician to the Boy's Industrial School, Lancaster; died at his home, July 29, from tuberculosis.

**John E. Hamill,** Phoenix, N. Y. (license, New York, 1880); aged 79; a member of the Medical Society of the State of New York; a practitioner for more than half a century; died at the Hospital of the Good Shepherd, Syracuse, July 25.

**Ezra Smith Koons,** Glouster, Ohio; Starling Medical College, Columbus, Ohio, 1890; aged 61; a Fellow of the American Medical Association; died in Grant Hospital, Columbus, July 31, from septicemia, following a mosquito bite.

**William Aloysius Gillen, Jr.,** Brooklyn, College of Physicians and Surgeons in the City of New York, 1906; aged 35; assistant attending surgeon to St. Mary's Hospital, Brooklyn; died at his home, July 29, from typhoid fever.

**Henry Burt Herrick,** Cleveland, Ohio; Western Reserve University, Cleveland, 1891; aged 54; a Fellow of the American Medical Association; who had been engaged in Red Cross work in France; died in Brest, June 16.

**Henry M. Lewis,** New York City; Hahnemann Medical College, Philadelphia, 1870; aged 69; surgeon to the Metropolitan Hospital, Blackwell's Island, N. Y.; died at the home of his daughter in Chester, Pa., July 28.

**Addis Bernard Gordy,** Butler, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1899; aged 44; died in the City Hospital, Columbus, Ga., July 25, five days after an operation for appendicitis.

**Andrew Pearson,** Wakefield, Kan.; Rush Medical College, 1883; aged 58; resident physician at the Chiloco Indian Reservation; died in the Presbyterian Hospital, Chicago, July 14.

**Augustus Francis McKay,** Colorado Springs, Colo.; Georgetown University, Washington, D. C., 1872; aged 68; died in Pueblo, Colo., July 24, from cerebral hemorrhage.

**Simon W. Simmons,** Laurel, Ohio; Starling Medical College, Columbus, Ohio; 1884; aged 76; a veteran of the Civil War; died at the home of his daughter near Sidney, Ohio, July 30, from senile debility.

**Leonidas H. C. Mintzer,** Spokane, Wash.; Jefferson Medical College, 1898; aged 45; formerly chief sanitary officer in the health department of Spokane; died in San Diego, Calif., July 17, from tuberculosis.

**Robert Stuart, Spiceland,** Ind.; Jefferson Medical College, 1860; aged 80; at one time a member of the Indiana State Medical Association; died at the home of his daughter in Henderson, Ky., July 26.

**Lyman S. Crotser,** Petoskey, Mich.; University of Michigan, Ann Arbor, 1883; aged 60; a member of the Michigan State Medical Society; died in a hospital in Petoskey, July 25, from cerebral hemorrhage.

**Ferdinand Lessing,** Philadelphia; University of Pennsylvania, Philadelphia, 1869; aged 81; a surgeon of volunteers during the Civil War; also an apothecary; died at his home, July 10.

**Henry C. Sommerville,** White Post, Va.; University of Pennsylvania, Philadelphia, 1870; aged 84; a Confederate veteran; for fifty years presiding elder; died at his home, July 27.

**John Webster Collins,** Toronto, Ohio; Columbus (Ohio) Medical College, 1879; aged 74; a Fellow of the American Medical Association; died at his home, July 31.

**Douglas Adolphus Shiley,** Bloomfield, Ind.; Bellevue Hospital Medical College, 1872; formerly of Chicago; died at his summer home in Bloomfield, Ind., August 9.

**Samuel Palmer Rawls,** Altus, Okla.; Charity Hospital Medical College, New Orleans, 1873; a Fellow of the American Medical Association; died at his home, June 20.

**Henry Herbert Reynolds,** Malone, N. Y.; University of Vermont, Burlington, 1890; aged 56; a Fellow of the American Medical Association; died at his home, July 27.

**James C. S. Harrod,** Denning, Ark.; Memphis, Tenn., Hospital Medical College, 1891; aged 52; a member of the Arkansas Medical Society; died at his home, July 27.

**Elisha P. Bomar,** Ohoopee, Ga.; Atlanta (Ga.) Medical College, 1894; aged 50; a Fellow of the American Medical Association; died at his home, April 27.

**Thomas L. Bacon,** Hopkinsville, Ky.; University of Louisville, Ky., 1855; University of Pennsylvania, Philadelphia, 1861; aged 85; died at his home, July 30.

**John McGregor,** Yankton, S. D.; University of Glasgow, Scotland, 1861; M. R. C. S., Edinburgh, 1865; aged 87; died at his home, June 18, from senile debility.

**Charles E. Bauer,** St. Louis, Missouri Medical College, St. Louis, 1879; aged 59; a Fellow of the American Medical Association; died at his home, July 30.

**Charles H. Mann,** Bridgeport, Pa.; Jefferson Medical College, 1874; aged 66; a Fellow of the American Medical Association; died at his home, August 3.

**Georgia Anna Arbuckle Fix,** Gering, Neb.; University of Nebraska, Homeopathic Department, Lincoln, 1885; aged 55; died in San Diego, Calif., July 26.

**Charles R. F. Greene,** Peekskill, N. Y.; New York Homeopathic Medical College, New York City, 1892; aged 50; died suddenly at his home, August 1.

**William Alfred Hobday,** Goldfield, Nev.; University of Buffalo, N. Y., 1881; aged 57; died at Palms, Calif., July 27, from carcinoma of the liver.

**Charles A. Kiefer,** Dayton, Ohio; Pulte Medical College, Cincinnati, 1876; aged 64; died at his home, July 22, from cirrhosis of the liver.

**August W. Ringer,** Cincinnati; Medical College of Ohio, Cincinnati, 1872; aged 70; died at his home, August 1, from cerebral hemorrhage.

**Guernsey P. Waring,** Alhambra, Calif.; Dunham Medical College, Chicago, 1897; aged 65; died at his home, July 29, from heart disease.

**Charles Samuel Abbott,** Providence, R. I., Dartmouth Medical College, Hanover, N. H., 1880; aged 76; died at his home, June 23.

**Harry Hall Woodward,** Des Moines, Iowa; Drake University, Des Moines, 1887; aged 55; died at his home, July 6.

**David Townsend McKinney,** Pittsburgh; Jefferson Medical College, 1860; died at his home, July 9.

# *The Propaganda for Reform*

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

## MORE MAIL-ORDER FRAUDS

### Four Concerns Are Debarred from the United States Mails

The public does not realize the wonderfully efficient work that the United States postal authorities are doing in protecting it against mail-order fakers of a medical or quasi-medical type. The task of the postal inspectors who investigate such concerns is a difficult and thankless one, for the exploiters of some of these frauds possess no little influence. Neither does the public fully realize the value of the painstaking and judicial reports made by Judge W. H. Lamar, the solicitor of the Post Office Department, who submits to the Postmaster-General the various memoranda based on the postal inspectors' reports. THE JOURNAL is practically the only publication that gives any extended account of the government's work in this direction. For some years the Propaganda Department has been publishing more or less complete reports of the cases in which the government has closed the mails to medical frauds. Following are some brief articles of this type:

**Mrs. A. S. Hon.**—Mrs. Hon conducted a medical mail-order business at South Bend, Indiana, advertising and selling various alleged remedies for the self-treatment of ailments peculiar to women. Mrs. Hon is of Polish descent and her husband, who was also interested in the business, was born in Poland and, although he had been in this country for twenty-five years, is, according to Mrs. Hon's testimony, practically unable either to read or to write English. Neither Mrs. Hon nor her husband have the slightest medical knowledge nor have any of her employees. The only physician who had anything to do with the business was one "Dr. Fears" who was said to visit the office from time to time when the nostrums were being compounded. The preparations were analyzed by the Bureau of Chemistry of the Department of Agriculture at the time of the investigation by the Post Office Department into this humbug. "Mrs. Hon's Healing Compound" was found to be a pinkish powder consisting chiefly of alum with small amounts of boric acid, zinc sulphate, thymol, coloring matter, etc. "Mrs. Hon's Womb Suppositories" had a fatty base resembling lard with some cocoa-butter and contained a considerable quantity of alum with small amounts of boric acid, zinc sulphate, morphin and coloring matter. "Mrs. Hon's Invigorator Pills" were black, sugar-coated, elliptical pills of the iron-quinin-strychnin type. "Mrs. Hon's Stomach Tablets" were bright red, sugar-coated tablets containing large amounts of bismuth subgallate and magnesium (calculated as Epsom salts) with small amounts of aloes, red pepper, etc. "Mrs. Hon's Womb Relief" was a coarsely ground powder of aromatic odor which under the microscope showed the presence of cloves, cinnamon, scullcap and unidentified root and bark. The claims made by Mrs. Hon for her nostrums were obviously and patently false and fraudulent. She, of course, submitted a number of testimonials in defense of her business. After considering all the evidence in the case, Judge Lamar, solicitor for the Post Office Department, declared the business a scheme for obtaining money through the mails by means of false and fraudulent pretenses, representations and promises and he recommended that a fraud order be issued. This order was issued May 23, 1918.

**The Publishers' Advertising Agency, Inc.**—This rather imposingly named affair was promoted by one Clarence E. Worthen, Boston, Mass., who was called on by the federal

authorities to show cause why a fraud order should not be issued against the business. On the date set for the hearing, Abraham Goldberg, attorney for Worthen, asked that action in the matter be deferred until a reply to the charges could be prepared. This request was granted. Shortly afterward an answer was submitted denying the charges but stating that Worthen would be unable to appear before the department in person. The attorney indicated that Worthen would be willing to take steps looking to the dissolution of the business if the Post Office Department would drop the charges. The federal authorities, however, would not entertain this proposition. Judge Lamar, solicitor for the department reported the facts in the case to be, in part, as follows:

"The Publishers' Advertising Agency, Inc., is operated by Clarence E. Worthen who acts as its president and treasurer, for the sole purpose of securing space in various newspapers published throughout the country to be devoted to the advertising of a large number of proprietary articles compounded and sold by him through drug stores, and is not a bona fide advertising agency in that it does not handle advertising for any other concern or person. The mails are used in the transmission of letters written by Worthen on stationery on which appears the name The Publishers' Advertising Agency, Inc., and which are addressed to the publishers of newspapers with the view of contracting for the advertising space above referred to. The scheme is used to secure advertising on credit which is usually accorded to an advertising agency but denied to an individual. The post office inspector who conducted the investigation has submitted evidence showing conclusively that it is not Worthen's intention to pay for the advertising thus secured, nor does he as a matter of fact do so. One hundred and twenty-six publishers have complained to the department that they had run Worthen's advertising in accordance with the contract but that they were unable to obtain any money whatsoever from him. The total amount of these unpaid bills is $4,161.77, and it is safe to assume that this is a mere trifle compared with the total amount which Mr. Worthen owes for advertising. He gives the address of the concern as 44 Bromfield Street, Boston, Massachusetts, but it is found that this is a blind address as Worthen does not even have desk room at that place. All of his mail so addressed is forwarded for delivery to 153 West Emerson Street, Melrose, Massachusetts, his place of business.

"The postmaster at Boston, Massachusetts, reports that on an average fifty letters and about two sacks of papers are daily received at his office addressed to this concern."

The solicitor declared that the scheme was one for obtaining property through the mails by means of false and fraudulent pretenses, representations and promises and recommended the issuance of a fraud order. It was issued.

**L. A. Johnson, alias "Dr. George B. Williams" and "The Associated Doctors."**—Post Office Inspector M. R. Martin of the St. Louis Division submitted evidence to the solicitor of the Post Office Department showing conclusively that L. A. Johnson was conducting a scheme for obtaining money through the mails by fraud. Johnson, it seems, is an ignorant negro about 35 years old who located at Lake Village, Ark., last November and has been operating ever since under the names "Dr. George B. Williams," "Dr. L. A. J. Johnson" and "The Associated Doctors." He has been twice prosecuted and fined in the local courts for practicing medicine without a license but after paying his fines continued his operations. In April Johnson was arrested on the charge of using the mails to defraud and was held under $500 bail to await the action of the United States grand jury at the October term of court. Johnson did not furnish bail and is held in the Pulaski County Jail at Little Rock. His victims were mostly negroes to whom Johnson sent a circular telling of his alleged supernatural and superhuman powers describing himself as a "man of wonder" and a "revealer and controller of many things spiritual and material" alleging further that he was "born of a blessed mother" and "received the gift from Heaven according to the will of God," ending up with the claim that he would cure anything "you were not born with." Johnson modestly describes himself thus:

"Dr. L. A. J. Johnson, I. N. S. W. B. A., Master of Sixth and Seventh Book of Moses, Chiropractic, Phrenology, Philosophy, Anatomy, Telepathic Mentalist, Pathology, Chemistry, Spirit Binding; American University of Kiropractic, Osteology, Arthrology, Neurology, Myology, Angiology, Splanchnology; Treatment of all kinds of diseases with the Hand, Mind and Herbs. Cure absolutely guaranteed or no pay. I Can Help You in all Things."

Judge W. H. Lamar, solicitor of the Post Office Department in his memorandum to the Postmaster-General said, in part:

"It will be noted from this circular that Johnson claims he is possessed of superhuman and supernatural knowledge and that he can cure anything 'you were not born with'; that he had accomplished wonders in hospitals, homes and courts, having practiced in Central America, West India, Cuba and Canada. The wording is so framed as to appeal to the superstition and ignorance of certain of the colored race. The falsity and absurdity of the pretentions and representations appearing therein are too apparent to require refutation. Although the circular sets out that if no cure is effected there will be no charge it has been ascertained that Johnson will not take up a case unless an advance fee of from $10 to $15 is paid."

Johnson admitted, when under oath, that, although posing as a doctor, he had never been granted a license to practice medicine in any state, that he had never attended any kind of a school except a country public school when a boy, that there was no meaning to a number of the abbreviations and phrases used in his circular but that he employed them for the purpose of giving a savor of mystery which the negroes did not understand. Johnson received mail and cashed money orders under both the names Williams and Johnson and as it seemed probable that he would be successful in furnishing bail and thereby secure his release from jail it was likely that he would continue his fraudulent practices. The amount of money filched from credulous negroes through the operation of this scheme is estimated at $1,000. On May 20, 1918, a fraud order was issued against Johnson closing the mails to him.

**Last Chance Medicine Company.**—C. Frank Jones, a negro who kept a small drug store at Birmingham, Ala., did business under the names "The Last Chance Medicine Company" and "Dr. C. Frank Jones." Jones was without any medical education or training but held himself up to the public as a physician skilled in the diagnosis and treatment of disease and promised a cure to all who took his treatment. At the time Judge Lamar submitted his memorandum to the Postmaster-General recommending that Jones be denied the use of the United States mails, Jones was in the Birmingham city jail serving a sentence of ninety days following his conviction for practicing medicine without a license. In his memorandum Judge Lamar says:

"When his establishment was raided by the city authorities a number of letters from negroes requesting treatment for various ills were found bearing upon the envelopes notations showing the amounts requested to be sent in payment for the treatment. A very lengthy symptom blank similar to that employed by the ordinary medical mail order fake in which a great number of questions are asked is used by him in furtherance of the scheme. It has been repeatedly testified before this office by experts in the science of the treatment of disease that physicians of knowledge and experience cannot determine from the answers to such questions the nature of the trouble from which the patient is suffering or the cause thereof, but Jones, who has no such knowledge or experience, attempts to and does by false pretenses made to persons through the mails convince them that he is a skilled physician fully capable of determining the trouble from which they are suffering and is able to and will give to them a rational and effective remedy for such trouble. All the representations including the pretentious symptom blank are typical specimens of the literature employed by the usual mail order fraud and are used by him for the purpose of inducing persons who are sick or believe themselves to be sick to part with their money in payment for a treatment which the evidence fully shows and which he is well aware is without efficacy in giving them relief or restoring them to health.

"The evidence in this case is so conclusive of the fraud practiced that it was deemed unnecessary to issue a citation to show cause before recommending the issuance of a fraud order."

The mails were closed to Jones, May 29, 1918.

# Correspondence

## THE SIGNS OF SYPHILIS

*To the Editor:*—In the current number of the *American Journal of Syphilis,* Dr. A. S. Warthin of the University of Michigan contributes an extraordinary paper on the "New Pathology of Syphilis," in which he states that, as a result of microscopic methods, he has been able to demonstrate syphilitic changes in 40 per cent. of 750 subjects examined postmortem. Assuming that the population of the state of Michigan is neither more nor less venereally unfortunate than that of other localities, Dr. Warthin's statement naturally suggests that 40 per cent. of humanity is demonstrably if not dangerously syphilized. Happily for the individual as well as for a profession that is already sufficiently if not unduly impressed by the ubiquity of syphilis, the methods by which Dr. Warthin arrived at this remarkable and disquieting conclusion are not beyond dispute, identical methods in other hands having failed to yield comparable results. For example, Dr. Warthin, on the basis of a comparatively limited necropsy experience, makes the extraordinary statement that in "only a small number of cases are the gross lesions . . . typical enough to be recognized by the naked eye" and that "the pathologic diagnosis of syphilis is essentially microscopic."

I venture to suggest that the pathologist whose routine brings him in contact with one or several necropsies daily, and who is called on thousands of times in the course of every year to interpret microscopic alterations in tissues, will be slow to subscribe to these sentiments. Certain it is that the "sclerosis of connective tissue and plasma cell infiltration," so prominently depicted by Warthin as characterizing syphilitic lesions, are not so confidently interpreted by most pathologists. So, too, Warthin's measure of success in finding *Spirochaeta pallida* in apparently unchanged tissues or in small fibrotic foci in different organs has not fallen to the lot of certain other pathologists employing the same methods in search of the self-same truth, and bespeaks for the distinguished Michigan investigator an acuity of vision that is apparently vouchsafed to few. In fact, the demonstration of spiral micro-organisms in silver preparations of the older, sclerotic tissues of known syphilitic lesions is by no means an easy or common accomplishment, and even in active, vicious syphilis it is sometimes a fruitless task. Nor has the Wassermann reaction aided materially in the all-important determination of the incidence of syphilis. While a positive Wassermann reaction is a highly suggestive indication of syphilis, it is now almost universally admitted that the reaction has its limitations—an occasional enthusiast to the contrary—and that it sometimes occurs in conditions other than syphilis and that it does not always occur in syphilis.

All things being taken into consideration, it would seem that the most dependable signs of syphilis still are those which pathologic anatomists and properly trained clinicians have long known, the refinements of serology and of microscopic technic serving as additional considerations of undoubted value.

Douglas Symmers, M.D., New York.
Acting Director of Laboratories, Bellevue and Allied Hospitals.

## SODIUM INSTEAD OF POTASSIUM SALTS—WITH ONE EXCEPTION

*To the Editor:*—I am strictly in favor of the agitation which has for its purpose the replacement whenever possible of potassium salts by the corresponding sodium salts. Whenever the corresponding potassium and sodium salts are equivalent in their action, the sodium salt is practically always preferable. It is less depressing and less irritating to the gastro-intestinal tract.

There is, however, one exception. And that is the iodid. I would consider it a calamity if physicians were induced to use on their tertiary syphilitic patients sodium iodid instead of potassium iodid.

It is a truism to say that a salt does not merely present the sum of actions of its component elements or ions. Chlorin in combination with hydrogen does not have the same effect as chlorin in combination with sodium. And iodin in combination with sodium has not the same effect as iodin in combination with potassium. Though the percentage of iodin in sodium iodid is considerably greater than in potassium iodid, nevertheless a certain dose of potassium iodid will exert a much more decided and intensive action than the same dose of sodium iodid. The action of the iodin ion seems to be greatly intensified by its combining with the potassium ion.

No syphilologist, no general practitioner, who had occasion to treat tertiary syphilis, ulcerative gummas or gumma of the brain would fail to bear testimony to the difference in effect between potassium and sodium iodid.

Let us all use sodium salts instead of their corresponding potassium salts, but let us bear in mind this one exception: not to substitute sodium iodid or ammonium iodid or any other iodid when potassium iodid is distinctly and unequivocally indicated.

William J. Robinson, M.D., New York.

## EGG-SHELLS AT ARMY HOSPITALS

*To the Editor:*—An experience in the Civil War at the Satterlee Hospital in West Philadelphia was described by Weir Mitchell in an address in Chicago not long before he died. At that one hospital of 3,000 beds the egg-shells were saved and sold. The revenue, if I remember rightly, was $3,000 a year! They were used in the manufacture of face powder, as they are pure calcium carbonate. The revenue went into the hospital fund for the purchase of otherwise unobtainable luxuries for the sick. With our present immense armies the revenue from this one "by-product" should be correspondingly increased. Possibly this has already been done, but I have failed to see any statement to that effect.

W. W. Keen, M.D., Philadelphia.

# Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### DI-CROTALIN TREATMENT OF EPILEPSY

*To the Editor:*—Do you have any literature or information relative to the Di-Crotalin treatment for epilepsy? I will be very grateful if you can furnish information as to method of preparation, rationale of the treatment, etc.

R. R. Decker, Captain, M. R. C.,
U. S. Soldiers' Home, Washington, D. C.

Answer.—Di-Crotalin is a rattlesnake venom preparation sold by the Swan-Myers Company of Indianapolis as a "Treatment for Epilepsy, Chorea, Bronchial Asthma, Chronic or Hereditary Nervous Headache, Nervous Prostration Incident to Change of Life, Hysteria-Mania, Insomnia, Neurasthenia, etc." Dr. Thomas J. Mays of Philadelphia advocated the use of rattlesnake venom for tuberculosis. Later his former assistant, Dr. R. H. Spangler, used the same material in the treatment of epilepsy. That any measure of success sufficient to justify the adoption of the rattlesnake venom or crotalin treatment for epilepsy has resulted is not to be concluded from the available reports. Still less evidence is there for the use of rattlesnake venom in the list of conditions for which the Swan-Myers Company has recommended its preparation. There are a number of good reasons why a cautious physician will shun the administration of this treatment and advise against it. J. F. Anderson, working in the hygienic laboratory of the United States Public Health Service, reported a death from the crotalin treatment in consequence of infection, and reports that the market supply of crotalin solution and crotalin tablets is highly contaminated. He also found both crotalin and crotalin solution to vary in activity. The use of rattlesnake venom was discussed in The Journal, March 15, 1913, p. 850.

# Medical Education and State Boards of Registration

## COMING EXAMINATIONS

ALASKA: Juneau, Sept. 3. Sec., Dr. L. P. Dawes, Juneau.
COLORADO: Denver, Oct. 1. Sec., Dr. David A. Strickler, 612 Empire Bldg., Denver.
HAWAII: Honolulu, Sept. 9-13. Pres. R. W. Benz, 1141 Alakea St., Honolulu.
IDAHO: Boise, Oct. 1-2. Sec., Dr. Ray H. Fisher, Rigby.
IOWA: Des Moines, Sept. 10-12. Sec., Dr. G. H. Sumner, Capitol Bldg., Des Moines.
MASSACHUSETTS: Boston, Sept. 10-12. Sec., Dr. W. P. Bowers, Room 501-1 Beacon St., Boston.
MINNESOTA: Minneapolis, Oct. 1-4. Sec., Dr. T. McDavitt, 741 Lowry Bldg., St. Paul.
MISSOURI: Kansas City, Sept. 30-Oct. 2. Sec., Dr. George H. Jones, State House, Jefferson City.
MONTANA: Helena, Oct. 1. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
RHODE ISLAND: Providence, Oct. 3. Sec., Dr. B. U. Richards, 315 State House, Providence.

### Methods of Chiropractors Included in the Practice of Medicine

Laying a patient down on his face and manipulating the vertebrae or twisting the neck with the hands or pressing on the spinal column with the hands and at times with the knees, as is done by chiropractors, constitutes the practice of medicine within the meaning of the Medical Practice Act. This is the gist of an opinion recently handed down by the Appellate Court of the Fourth District in the case of the *People of the State of Illinois* v. *J. H. Black*. Mr. Black is a graduate of the Davenport School of Chiropractic, and for about eighteen months prior to the beginning of the suit was located at Junction City in Gallatin County. He opened up an office, placed a sign thereon with the words "Dr. Black, Chiropractic," and carried on the practice of his profession in that office without being licensed by the Department of Registration and Education. On the trial of the case in the Circuit Court, the jury found that he was not guilty of violating the Medical Practice Act. The Appellate Court reversed the finding of the lower court and held that the verdict of the jury was manifestly against the evidence and the law. The Appellate Court holds that one of the instructions given by the lower court on behalf of Mr. Black was erroneous and misleading and should not have been given. This instruction is as follows:

> And you are further instructed that if you believe by a preponderance of the evidence that the defendant did not practice medicine, but that his acts were, in fact, an adjustment of the human body for the purpose of adjusting the spinal column or other organs for the nerves for the purpose of causing the flow of blood to flow freely, and by so doing that the blood would flow freely, and thereby the cause removed, then the defendant would not be guilty of practicing medicine in violation of said statute, unless he held himself out or advertised himself as a doctor or physician.

The Appellate Court says that the foregoing instruction is in direct conflict with the section of the Medical Practice Act defining who are to be regarded as practicing medicine and also in direct conflict with the opinions of the Supreme Court on this subject.

### The American Board for Ophthalmic Examinations

The American Board for Ophthalmic Examinations will hold its fifth examination at the New York Eye and Ear Infirmary, New York, Friday, Oct. 25, 1918. In addition to the general requirements for admission, the examinations in ophthalmology consist of case records, written examinations and clinical laboratory and oral examinations. Candidates are required to submit twenty-five complete case records. Ten of these should be cases of ocular diseases and defects of varied character, including errors of refraction or muscle balance, and external ocular diseases or diseases of the uveal tract or retina, or of the optic nerve or glaucoma. The reports should show especially the reasons for diagnosis and for the operative treatment and the technic of operations.

The written examination will test the candidate's knowledge of the underlying principles or science of ophthalmology, including anatomy, embryology, physiology, physiologic optics, pathology, relations of the eye to other organs and diseases of the body. The oral examination will include the external examination of the eye; ophthalmoscopy (candidates are requested to bring their own ophthalmoscopes); measurements of errors of refraction; testing of the ocular movements and fields of vision; realtions of ocular conditions to diseases of other parts of the body and their treatment, and laboratory examination in the histology, pathology and bacteriology of the eye.

For further information address the secretary, Dr. W. H. Wilder, 122 South Michigan Avenue, Chicago, Ill.

### Kansas June Examination

Dr. H. A. Dykes, secretary of the Kansas Board of Medical Registration and Examination, reports the written examination held at Topeka, June 18-19, 1918. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Sixteen candidates were examined, all of whom passed. Fifteen candidates were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Total No. Licensed |
|---|---|---|---|
| Hahnemann Medical College and Hosp. of Chicago | | (1918) | 1 |
| University of Kansas | | (1918) | 14 |
| Washington University | | (1917) | 1 |

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Bennett Medical College | | (1910) | Illinois |
| College of Phys and Surg., Chicago | | (1912) | Illinois |
| Hahnemann Med. Coll. and Hosp. of Chicago | | (1907) | Illinois |
| Jenner Medical College | | (1912) | Illinois |
| Rush Medical College | | (1916) | Illinois |
| Keokuk Medical College, Coll. of P. & S. | | (1906) | Iowa |
| Hospital College of Medicine | | (1902) | Illinois |
| Louisville Medical College | | (1907) | Penna. |
| University of Louisville | | (1909) | Illinois |
| Tulane University | | (1913) | Oklahoma |
| Ensworth Medical College | | (1909) | Missouri |
| St. Louis College of Physicians and Surgeons | | (1910) | Oklahoma |
| Washington University | | (1917) | Missouri |
| University of Oklahoma | | (1917) | Oklahoma |
| Vanderbilt University | | (1915) | Alabama |

### Maine July Examination

Dr. Frank W. Searle, secretary of the Maine Board of Registration of Medicine, reports the written examination held at Augusta, July 2-3, 1918. The examination covered 10 subjects and included 100 questions. An average of 75 per cent. was required to pass. Of the 6 candidates examined, 5 passed and 1 failed. Two candidates were licensed through reciprocity. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|---|---|
| Chicago College of Medicine and Surgery | | (1908) | 75.5 |
| Bowdoin Medical School | | (1918) | 85 |
| University of Maryland | | (1914) | 79 |
| Harvard University | | (1918) | 78 |
| Columbia College in the City of New York | | (1892) | 75 |
| | FAILED | | |
| Tufts College Medical School | | (1898) | 65 |

| College | LICENSED THROUGH RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|---|
| Starling-Ohio Medical College | | (1911) | Ohio |
| Montreal School of Medicine and Surgery | | (1902) | Illinois |

### South Dakota July Examination

Dr. Park B. Jenkins, secretary of the South Dakota State Board of Health and Medical Examiners, reports the practical and written examination held at Deadwood, July 9-11, 1918. The examination covered 15 subjects and included 100 questions. An average of 75 per cent. was required to pass. Seven candidates were examined, all of whom passed. The following colleges were represented:

| College | PASSED | Year Grad. | Per Cent. |
|---|---|---|---|
| Atlanta Medical College | | (1915) | 84 |
| College of Physicians and Surgeons, Chicago | | (1907) | 89 |
| Loyola University | | (1916) | 86 |
| University of Illinois | | (1913) 85; (1915) | 83 |
| University of Nebraska | | (1914) | 90 |
| McGill University | | (1915) | 83 |

# Book Notices

Animal Parasites and Human Disease. By Asa C. Chandler, M.S., Ph.D., Instructor in Zoology, Oregon Agricultural College. Cloth. Price, $4.50 net. Pp. 570, with 254 illustrations. New York: John Wiley & Sons, Inc., 1918.

In this work the rôle played by animal parasites in causing disease in man, either by direct invasion of the human host, or indirectly by serving as the carriers of the morbific agent, is clearly set forth. The author is a teacher of zoology, and naturally he lays special emphasis on the structure and biologic features of these animal parasites. The more strictly medical aspects, such as the clinical feature of the disease, the finer details of diagnosis, are often rather scantily treated. In the strict sense, therefore, it cannot be regarded as a textbook of medicine, nor is it the author's intention that it should be so regarded. He clearly states this in the preface. In a word, the book is more or less popular in character. Viewed from this standpoint, it may be commended. Information has been compiled from various sources and is presented in an orderly, readable style. While he is generally thoroughly reliable, one may note the tendency of the compiler occasionally to accept as true certain printed statements, perhaps because there is lacking the check that would have come from a healthy skepticism had there been personal laboratory, bedside or research experience. For instance, the statements regarding the diagnostic value of the Wassermann and luetin tests in syphilis and the curative effect of arsphenamin are much too optimistic according to the views of many competent men of experience. The relation of intestinal worms to appendicitis is also questionable. But, on the whole, the work is acceptable. It is freely illustrated with excellent cuts that are explanatory and helpful.

The Composition of Certain Patent and Proprietary Medicines. Compiled by John Phillips Street, Major, Sanitary Corps, N. A. Cloth. Price, $1.25. Pp. 274. Chicago: American Medical Association, 1917.

It has been estimated that the American public spends annually $150,000,000 for proprietary—"patent"—remedies, the great majority of which are secret in composition. This fact alone, Major Street suggests, makes the actual composition of such products of direct public interest. Although a large amount of information on this subject has been published by various organizations, particularly by the American Medical Association, by the federal government and by the inspection officials of some of the states, the records have been widely scattered and, in many instances, practically inaccessible to the public. The purpose of this compilation is to bring into one volume an accurate record of the hundreds of analyses scattered through some fifty publications. Mr. Street has done the work well. Although the great majority of the preparations whose analyses are given are of the "home remedy" or "patent medicine" type, there are not a few products that are sold, ostensibly at least, for physicians' prescriptions. Analyses of more than 2,500 proprietary medicines are given; and as several analyses of some of these remedies have been made at different times or by different sources, there are more than 3,100 analyses. No attempt is made to discuss the value or lack of value of the preparations dealt with, and the author specifically states that the matter is "published without comment and without prejudice." There is no doubt that the compact form in which they are put out will make the book a useful compendium to all those who are interested in the proprietary medicine problem.

Interpretation of Dental and Maxillary Roentgenograms. By Robert H. Ivy, M.D., D.D.S., Associate Surgeon, Columbia Hospital, Milwaukee. Cloth. Price, $2.50. Pp. 146, with 259 illustrations. St. Louis: C. V. Mosby Company, 1918.

This is a helpful book for the dentist or physician who is not an expert in the interpretation of dental roentgenograms, but who desires to be able to read with reasonable accuracy the films of teeth that are now so frequently brought in by patients as aids in diagnosis. A brief outline is given of the anatomy and pathology involved in the roentgenograms of the teeth and jaws, together with the bearing of the abnormal findings on clinical diagnosis, prognosis and treatment. Some technical points as to the methods of making stereoscopic plates are taken up, and then follow several pages of illustrations showing normal and pathologic conditions. These illustrations are for the most part good and the descriptive legends clear and to the point. The book is well printed and fulfils the purpose stated in the preface of presenting to members of the medical and dental professions the data necessary for making an intelligent diagnosis of pathologic conditions about the teeth and jaw bones in which roentgen examination plays a part.

Oral Sepsis in Its Relationship to Systemic Disease. By William W. Duke, M.D., Ph.B., Professor of Experimental Medicine in the University of Kansas School of Medicine. Cloth. Price, $2.50. Pp. 124, with 170 illustrations. St. Louis: C. V. Mosby Company, 1918.

This excellent little volume deals with the question of dental sepsis and its effects on bodily health, both direct and remote. One chapter is devoted to pyorrhea, another to alveolar abscesses, another to metastatic infections, another to the subject of nonrelated infections as influenced by oral sepsis, and another chapter to the toxic effect of oral sepsis and its relation to headache. There is a good summary, and the conclusions drawn from the study are fundamental and vitally important in the diagnosis and treatment of many heretofore obscure and refractory systemic diseases. Roentgenograms of all dental septic conditions are shown and are replete with explanatory notes. At the end there is a complete bibliography. The book should be equally valuable to dentists and physicians.

A Manual of Histology. By Henry Erdmann Radasch, M.Sc., M.D., Assistant Professor of Histology and Embryology in the Jefferson Medical College. Cloth. Price, $2.50 net. Pp. 580, with 307 illustrations. Philadelphia: P. Blakiston's Son & Co., 1918.

Unnecessary theory and discussion have been avoided in this manual. The histology of the various tissues is described in systematic order. By arrangement of bold face type and italics the student may quickly refer to the descriptions which characterize the structure of any special tissue—an especially valuable feature when it is desirable to make a general review. The book is fully illustrated, with complete explanatory legends to each picture. The subject has been covered concisely, yet with sufficient thoroughness to make the book useful to the student who requires a more adequate presentation of the subject than is to be found in quiz compends, yet not so exhaustive as that given in the larger textbooks.

Cancer: Its Nature, Causes, Diagnosis and Treatment. By Robert Holmes Greene, A.M., M.D., F.A.C.S. Cloth. Price, $1.50. Pp. 172. New York: James T. Dougherty, 1918

This book discusses certain features of the topics mentioned in the title, for the most part conventionally, superficially and incompletely. The chief new matter is the emphasis laid on the observation by Dr. J. A. Killian that in the blood of cancer patients the total nonprotein sulphur content rises to two or three times the normal figure, while the total sulphates remain at the normal level. The urine shows an increase in the neutral sulphur compared to the oxidized sulphur, but the total amount of sulphur excreted is diminished. Considerable speculation as to etiology and treatment is indulged in on the basis of these changes in sulphur metabolism.

A Surgeon in Arms. By Captain R. J. Manion, M. C., of the Canadian Army Medical Corps. Cloth. Price, $1.50 net. Pp. 310. New York: D. Appleton & Co., 1918.

As a medical officer on the West Front, Captain Manion was particularly able to study the morale of the Allied army under the most adverse conditions. His book represents not so much a diary of his progress as a series of chapters on various phases of his work. It has not the fine finish of careful literary preparation; but readers of war books are asking merely for red blood and adventure, not "style." Captain Manion was in "it" and he tells about "it" in his own language.

# Social Medicine, Medical Economics and Miscellany

## THE RECONSTRUCTION OF THE RACE*

FREDERICK PETERSON, M.D.
NEW YORK

I will present some views on education from the standpoint of the alienist. Pathology has, after all, taught us the most we know about the normal in biology. We learned physiology from our studies of function perverted by disease. We learned about the normal brain through investigation of diseased brains. The admired Montessori method of teaching normal children had its origin in the methods of Itard and Seguin in teaching idiots. So now in a world half mad, with all sorts of disorders in the body politic, perhaps an alienist may help, be it never so little, in some new adjustment toward the normal.

We have been suddenly awakened by the war from our complacent slumber. Pain, suffering, danger, stirring elements in the psychologic mechanism, rouse alarm, quicken alertness, light up all the old memories and powers of defense.

The horror and surprise of a nation of madmen broken loose on the world has brought a sudden consciousness among the peoples. We are appalled that our selective draft of young men who are to fight our battles in France and Flanders reveal defects in an average of nearly 30 per cent.—these young men who were the schoolchildren of yesterday. What was the matter with the schools of yesterday which took them in and returned to us only two thirds as able-bodied citizens? The answer is found in the schools of today.

Authorities show us that there are physical defects in 75 per cent. of the 20,000,000 schoolchildren of today, most of them preventable and remediable, heart and lung diseases, disorders of hearing and vision, malnutrition, diseased adenoids and tonsils, flatfoot, weak spines, imperfect teeth—and among them 1 per cent. of mental defect. The children in country schools are worse off than in city schools. We are sending the best we have to foreign battle fields. We are retaining the 30 per cent. of imperfect citizens to leaven the race of tomorrow. There is such a thing as the prepotence of inferiority. It is often said that we get what we deserve in the way of government, laws and institutions. Since it is possible in our democracy for a moron to be elected mayor of a city, and an imbecile to be made governor of a vast state, it may easily be imagined how the smaller offices in our legislatures, county boards and city councils overflow with the inferior and the unfit.

We have spent millions of dollars on swine plague, foot and mouth disease of cattle, pine blister, chestnut blight, gypsy moth, chicken cholera, and we have the annual "pork-barrel" of millions on millions of dollars devoted to all sorts of trivial and foolish exploitations of rural creeks and hamlets; but what have we spent on our greatest national asset—health of body in our schoolchildren? Body is the foundation on which mental structure must rise. It is of the first importance that the physical foundation be made and kept sound and strong. The mental structure is secondary to that. We are spending enormous sums on medical care of our insane and other defectives in institutions all over the country, and rightly so, to do what we can to repair our broken adults. This is relief work; but what we spend on preventive measures, on health education for our growing children is small by comparison.

The children are the state's best property, outranking lands, produce, mines, waterpower, live stock, forests, railways. Think of the billions of dollars spent on these secondary interests. Think of the indifference and opposition to the care of children, to 2-cent lunches to be paid for by the children themselves, to doing away with child labor in factory and mine, to the smallest health measures demanded for their welfare. It needs, indeed, an alienist to direct attention to these facts.

Compulsory education we have—compulsory feeding and training of the mind. Compulsory health we must have—compulsory feeding and training of the body.

In the war against ignorance we have conscripted the schoolchildren. They are the vast draft army of our second line of defense. But in what sort of cantonments do we house them? What physical drill do we give them, what medical inspection and care, what sanitation, what remedial steps do we take to restore them quickly to the ranks when they are ill?

But enough of destructive criticism. Let us turn to the idea of a reconstruction of the race. Let us read the old books with new comprehension. It is almost a hundred generations ago that a teacher (Mencius) wrote:

> The root of the empire is in the state. The root of the state is in the family. The root of the family is in the individual. So for the people — encourage them; lead them on; rectify them, straighten them; help them; give them wings!

We must set a standard. It might be that of Dr. Oliver Wendell Holmes, "to begin the education of the child a hundred years before it is born." That can be attained in a few generations. To accomplish it we must coordinate all the organizations now at work for the conservation of our citizenry—the maternity classes, the baby-saving societies, the mothers' committees, the kindergartens, the child welfare and physical training bodies, the seaside, the countryside and sunshine associations, all that have to do with preschool welfare, the public and private schools, the Child Labor Committee, the Mental Hygiene Association, the boards of education and the boards of health. The presidents of boards of health and boards of education should be ex officio members of these coordinated boards. This is a great undertaking, but we can begin by breaking into the curriculum of the public schools and establishing education in health, especially in food knowledge and food habits as a vital and essential part of the teaching. From the schools the health instruction will be carried home to the parents and younger children, and soon the whole movement of reconstruction will permeate the state.

### PROGRAM FOR RECONSTRUCTION

The program is a large one, with several requirements:

1. The teachers themselves should be given better conditions for their own health and fuller instruction in all that has to do with the laws of health.

2. Every city and country school should be made sanitary and kept so, and the school and its grounds should be as beautiful as possible, not only for the benefit of the teachers and the pupils, but as an example to all other citizens who are beginning to use the school more and more as a community center.

3. Every child should be regularly weighed, measured and examined and a health record kept, which should accompany him throughout his school life. It should be the duty of the authorities to see that the defects of our young citizens are corrected, and disorders of growth and nutrition remedied. As malnutrition is one of the most serious conditions, a hot luncheon should be made available for every child and every teacher. The health examination should include dental inspection and treatment.

4. Each school should have adequate provision for physical training, gymnasiums, athletic fields, playgrounds, gardens and shops, together with especially qualified instructors in physical training and vocational fields.

5. Finally, with the foregoing foundations, there should be a thorough system of instruction in all matters pertaining to health with special emphasis on health problems rather than on disease, in physical and mental habits, in personal hygiene, in public health and sanitation, in methods to avoid communicable diseases, in the responsibilities of parenthood, and in all that relates to nutrition and growth, including foods and food values and food habits.

This is a large program, too large for the inequalities of conscience and consciousness of our multitudinous states. It might be carried out in a few states soon and in others only after generations.

* Read before the National Education Association, Pittsburgh, July 3, 1918.

This is a scheme for the reconstruction of the whole people. It is a federal program. It is an emergency program. It should have the immediate attention of our foremost teacher in the presidential chair. We need a Hoover for the children —a children's health administrator.

With all this in view and after months of careful planning, the National Child Health Organization has been formed, whose literature is being now distributed. Do the first practical thing for a beginning. The teachers can place scales and a measuring rod at once in every school and with the height and weight and age charts that will be sent on request, the campaign can be immediately started against one of the chief evils, namely, malnutrition. The Child Health Organization has some of the best teachers and educators in the country as members, and counts on its board the foremost medical specialists on children and public health. Its publications will be supplied on request to all who desire them. The office of the Child Health Organization is at 289 Fourth Avenue, New York. Dr. L. Emmett Holt is chairman. Some of the other medical members are Drs. S. McC. Hamill, G. R. Pisek, Victor G. Heiser, Thomas D. Wood, Bernard Sachs, Hermann M. Biggs, H. D. Chapin, Simon Flexner and William H. Welch. Among the educators are Charles W. Eliot, Cambridge, Mass.; Dean Thomas, Bryn Mawr, Pa.; Albert Shiels, Los Angeles; William Wirt, Gary, Ind., and John H. Finley, Albany, N. Y.

20 West Fiftieth Street.

## PHYSIOCHEMICAL PROPERTIES OF PRODUCTS OF THE GROUP OF THE ARSENOBENZENES

### Their Transformation in the Organism

In the *Annales de l'Institut Pasteur* (1917, **31,** 114-137), Danysz publishes the first instalment of the results from research work he has made on arsphenamin solution. He found that solutions of arsphenamin and similar preparations, prepared in the usual manner but with a small amount of calcium biphosphate added, soon change on exposure to the air and form precipitates which are readily soluble in sodium hydroxid. The solutions contained the arsenical in 1:5,000; calcium biphosphate 1:10,000, and sodium chlorid, 8:1,000. Danysz was impressed by the fact that the rate of precipitation depended on the amount of alkali used in making the solutions. He prepared solutions of luargol, which is essentially an antimony silver salt of the arsphenamin base differing from arsphenamin in its action only in minor details, as follows: Sodium hydroxid was added in amount sufficient (1) to form the monosodium salt, (2) to form a salt midway between the monosodium and disodium salts, (3) to form the disodium salt, and (4) one-half molecule of sodium hydroxid in excess. (The amount used in the second solution represents about the amount used, or perhaps a little more, in preparing the solutions for clinical use by most physicians.) When these solutions were allowed to stand in open tubes, the first became turbid within a few minutes, the second in from fifteen to twenty minutes, the third in from five to six hours, and the fourth only after more than twelve hours.

When injected into rabbits at the same rate, the monosodium solution (1) was found to be twice as toxic as the second solution, and the other two were less toxic than either of these. The hyperalkaline solution (4) caused pain on being injected; the veins sometimes became obstructed and later atrophied.

Danysz attributed the variations in toxicity to the precipitating out of the arsphenamin base in the blood stream, owing to the salts and carbonic acid present, just as it had been shown to do in test tube experiments. He found that in addition to the amount of alkali influencing the toxicity to a marked degree, the rate of injection also had a considerable influence. A dose of the monosodium salt that was certainly fatal if injected in one minute produced no ill effects when the injection was prolonged for fifteen minutes. He believed that the same explanation holds here, the base being precipitated in the latter case but slowly and in very fine particles. He also found that the amount of sodium chlorid used had a bearing on the rate of precipitation, and that even when used in the amount mentioned above it caused a more rapid precipitation. He concluded that an arsphenamin solution is colloidal in nature and behaves as such in the presence of sodium chlorid, and that the monosodium solution was more colloidal than the disodium solution, while neopreparations behave more as salt solutions.

Danysz concluded partly from experimental data and partly from theoretical considerations that when an arsphenamin solution is injected into the blood stream, the sodium is split off, allowing the base to be precipitated, and that in order for it to be eliminated by the kidneys, there must be first formed compounds of the arsphenamin base with organic bases present in the blood, which are soluble in neutral medium. He believes that when the initial precipitation is rapid, death occurs quickly in experimental animals when large doses are given, and that the so-called "nitritoid crises" may occur in man after the usual dose, the explanation of the mechanism being the same in the two cases, and that this does not represent a true toxic action of the drug in the usual sense. Examinations of animals dying under these conditions show hemorrhages, thromboses, etc., and precipitated drug in the blood. He refers to these accidents as crises of the first degree, and states that if they occur in a person having a normal blood composition, the preparation of the solution is at fault.

Transient crises, or what most physicians would describe as mild or moderate reactions, Danysz believes are explained by the same mechanism, as well as the delayed crises that are the most serious and often end fatally. In order of frequency, the transient are most common; the crises of the first degree are seen only occasionally, and never end fatally, while the delayed crises fortunately are rare, perhaps one in several thousand cases, and always occur after the second or some subsequent injection, and then not immediately but within from one to three days after the injection. He believes that here as well as in the less serious reactions the mechanism is the same, differing only in time and degree. The arsphenamin does not precipitate rapidly enough to cause immediate effects, but is not reformed into soluble organic compounds that can be eliminated. He believes that as a rule, and he has animal experiments that appear to prove it, the first injection in a measure vaccinates the organism, probably by causing an increased production of organic bases, making the subsequent doses better tolerated than the first.

From the practical standpoint Danysz recommends that the treatment be begun by a very small injection, and that the results following the second injection, which should also be small, be carefully observed. If this dose is tolerated as well as or better than the first, the treatment may be continued and the doses increased without fear of complications. Should this not be the case, the treatment should be discontinued for from eight to fifteen days, or several vaccinating doses should be given.

## HEALTH MATTERS IN PORTO RICO

The report of the commissioner of health of Porto Rico, W. F. Lippitt, for 1917 is not a cheerful or encouraging document so far as health conditions in the island are concerned. Lack of funds for salaries, equipment, supplies and transportation, with intimations of too much politics in some instances, are said to account for a backward state of things. In the municipality of San Juan it is said the service of beneficencia municipal is well cared for, and there is a good hospital, while among the other first class towns Ponce deserves the severest censure for lack of proper organization and attention to the sick. At Arecibo the hospital is well managed, but outdoor relief is neglected. Guayama, a small town, has a well managed hospital, credit being due to the enthusiasm of the medical inspector. Yauco and Humacao have good hospitals and good outdoor relief. Of the other towns of the island nothing good can be said. The salaries of municipal physicians range from $50 to $100 a month, with no chance to earn additional income outside. The hospital situation of the island is summed up thus: "The so-called

hospitals of the island, outside of those already specified, are so exceedingly bad, so unfitted for the reception of the sick, so lacking in everything needed for a hospital, that the sick prefer to die at home rather than to be taken to the hospital." Nevertheless, many sick are taken from the surrounding country and towns to hospital towns and left there, compelling the municipal authorities to take them in, thus throwing an unjust charge on the taxpayers. This is true of San Juan, which is especially mentioned. The health commissioner again calls attention to the alarming spread of tuberculosis and to the inadequacy of the appropriations to make any impression on this disease. More power for the health commissioner and greater appropriations, or funds raised by apportioned taxes, are essential to make any headway against this disease. The work against hookworm anemia is not being kept up as it should be for the same lack of funds and facilities. The remedy for the conditions described, the health commissioner says, is the organization of a bureau of charities under the department of health to have entire charge of the treatment of the sick in hospitals and outdoor relief. If this is not possible, with the exception of the municipal hospital of first class towns, all hospitals should be placed under the control of the department of health and sustained by funds secured by assessment from these municipalities. Furthermore, district hospitals should be organized, under the control of the department of health maintained by the insular government.

## *Medicolegal*

### Direction of Verdict to Sufficiency of Proof Under Medical Practice Act

(*State Board of Medical Examiners v. Giedroyc* (*N. J.*), *102 Atl. R. 906*)

The Supreme Court of New Jersey, in affirming a judgment of conviction of the defendant of practicing medicine and surgery without a license, in violation of Section 10 of the Medical Practice Act, as amended in 1915, holds that there was no error in directing a verdict for the plaintiff. A proceeding under that section is essentially a "civil suit," subject to the procedure peculiar to the civil jurisdiction of the court in which it is brought, and it is competent for the trial judge to direct a verdict for the plaintiff when the admitted facts conclusively show that the defendant violated the statute as charged. And sufficient was proved in this case. While under the statutory definition of the practice of medicine and surgery, which appears in section 8 of the act, the different acts or course of conduct which constitute the practice of medicine and surgery are stated in the disjunctive, the general rule is that where an offense may be committed by the doing of one of several things, the indictment may, in a single count, group them together by using the conjunctive "and" where "or" occurs in the statute, and so charge the defendant with having committed them all, and a conviction may be had on proof of any one of these things without proof of the commission of the others. So under sections 8 and 10, a complaint may charge that the defendant did, without license, practice medicine and surgery, in that he "did hold himself out as being able to diagnose, treat, operate and prescribe for a human disease, and did treat and prescribe for the same by means of a medicine," and thereunder the defendant may be convicted on proof of such holding out without proof of treatment and prescription by means of medicine. Consequently, if the admitted facts in this case conclusively showed that the defendant held himself out as being able to diagnose, treat, operate and prescribe for human diseases, the direction of a verdict was proper without regard to whether the undisputed evidence showed that he did actually treat and prescribe for such disease by means of a medicine. Now the plaintiff's testimony, so far as essential to a conviction, was corroborated by the defendant himself. The defendant admitted that he was a chiropractor; that he practiced hydropathy and naturopathy; that he made his living by treating people who were ill by the methods known as chiropractic, hydropathy and naturopathy; that in order to treat them he first diagnosed their disease or illness and then gave them treatments consisting of manipulations, or electric or vapor baths. He admitted diagnosing one Sweth's illness, admitted receiving $75 from Mrs. Sweth in advance for the treatment to be given Sweth, and did not deny that he told Mrs. Sweth that her husband was a very sick man, but that he, the defendant, could cure him if witness would pay him $75. This showed conclusively that the defendant held himself out, not only as being able to diagnose and treat the disease from which Sweth was suffering, but as being able to diagnose and treat human disease generally.

### Valid Law and Regulation for Protection of Water Supply.

(*Commonwealth v. Hyde* (*Mass.*), *118 N. E. R. 643*)

The Supreme Judicial Court of Massachusetts, in considering the statute of that state which empowers the state board of health to "make rules and regulations to prevent the pollution and to secure the sanitary protection of all such waters as are used as sources of water supply," with power to delegate the granting or withholding of permits to water commissioners, subject to investigation and revision by way of appeal to the board itself, holds that the delegation by the legislature of the right to make rules and regulations is within its power. The case is different from one wherein no power of delegation is conferred by the statute. The power of revising the conduct of the water commissioners reserved to the state board of health by the statute avoids the difficulty of vesting an untrammeled discretion in a subordinate board or officer.

The state board of health pursuant to the statute passed a regulation of which the pertinent part here was:

> No person shall . . . unless permitted by a written permit of the board of water commissioners of the city of Haverhill fish in . . . Crystal Lake . . . so called in the city of Haverhill, . . . said lakes . . . being used by said city as sources of water supply.

The court is of the opinion that the regulation passed by the state board of health, in pursuance of the statutory authority, prohibiting fishing on a body of water used as a source of water supply for a municipality, cannot be pronounced unreasonable. It requires no discussion to demonstrate that the preservation of the purity of the water supply for the domestic uses of the people is within the police power. The absolute prohibition of fishing on such a source of water supply could not be said to be unreasonable under the circumstances here disclosed. It is not irrational for a public board to deem it likely or possible that sources of contamination and germs of disease might have a causal connection with the presence of fishermen on the ice or waters of a supply of drinking water.

Wherefore, the court overrules exceptions to a conviction of the defendant, who was charged with going on the ice of Crystal Lake and fishing therein, without a written permit of the water commissioners of the city of Haverhill, in violation of the rules and regulations of the state board of health.

### Insanity and Not Intoxication a Defense to Crime

(*McCarter v. State* (*Okla.*), *170 Pac. R. 712*)

The Criminal Court of Appeals of Oklahoma, in affirming a judgment of conviction of defendant McCarter of assault with intent to kill, holding that the evidence offered by him to prove alcoholic insanity was insufficient, reaffirms what it has said before, that insanity, though superinduced by excessive and long-continued indulgence in alcoholic liquors, and known as "delirium tremens," or "mania à potu," renders a person so afflicted irresponsible for his acts, if it be of such a character as to deprive him of the mental capacity to distinguish between right and wrong, as applied to the particular act, whether he be under the influence of liquor at the time of the commission of the act or not; but, to do so, his affliction must be settled or fixed insanity, not a mere fit of drunkenness. A person, not previously laboring under such a disease or affliction, who voluntarily becomes intoxicated to such an extent and for such a period of time as to cause unconsciousness of his acts, is not irresponsible under the law for the acts done by him while in such mental condition.

# Society Proceedings

## COMING MEETINGS

Am. Assn. of Electro-Therapeutics and Radiology, Boston, Sept. 10-12.
Am. Assn. of Obstetricians and Gynecologists, Detroit, Sept. 16-18.
Am. Roentgen Ray Society, Ft. Oglethorpe, Ga., Sept. 4-6.
Colorado State Medical Society, Estes Park, Sept. 9-11.
Delaware State Medical Society, Wilmington, Oct. 8.
Indiana State Medical Association, Indianapolis, Sept. 25-27.
Kentucky State Medical Association, Louisville, Sept. 3-6.
Minnesota State Medical Association, Duluth, Aug. 28-30.
Missouri Valley Medical Society, Omaha, Sept. 19-20.
New Mexico Medical Society, Albuquerque, Oct. 7-8.
Ohio State Medical Association, Columbus, Oct. 1-3.
Pennsylvania State Medical Society, Philadelphia, Sept. 23-26.
Tri-State District Medical Society, Madison, Wis., Aug. 20-22.
Utah State Medical Association, Salt Lake City, Sept. 10-11.
Vermont State Medical Society, Burlington, Oct. 10-11.
West Virginia State Medical Association, Harpers Ferry, Oct. 1-3.
Wisconsin State Medical Society, Milwaukee, Oct. 2-4.

# Current Medical Literature

## AMERICAN

Titles marked with an asterisk (*) are abstracted below.

### American Journal of Medical Sciences, Philadelphia

July, 1918, **156**, No. 1

1 *Ancient Factors in Relations Between Blood Plasma and Kidneys. A. B. Macallum, Toronto.—p. 1.
2 *Typhoid Vaccine in Case of Typhoid Spine. W. Allan and J. W. Squires, Charlotte, N. C.—p. 11.
3 Electrocardiographic Evidence of Abnormal Ventricular Preponderance and of Auricular Hypertrophy. P. D. White and A. V. Bock, Boston.—p. 17.
4 Cholesterohydrothorax; Report of Case. B. F. Weems, Jr., New York.—p. 20.
5 Chemotherapy (Potassium Cuprocyanid) of Leprosy and Tuberculosis. T. Sugai, Osaka, Japan.—p. 30.
6 *Status Lymphaticus. D. Symmers, New York.—p. 40.
7 Study of Ochronosis. N. W. Janney, New York.—p. 59.
8 Relation of Physical Signs to Roentgen Plate in Pulmonary Tuberculosis. J. J. Singer, St. Louis.—p. 68.
9 Case of Congenital Absence of Uterus with Anomalous Vulvovaginal Anus. E. J. Strick, Chicago.—p. 75.
10 Clinical Experience with Koga's Cyanocuprol. T. I. Masuda and T. K. Matsuda, Japan.—p. 78.
11 Vaginal Metastases of Hypernephroma; Report of Case. G. Gellhorn, St. Louis.—p. 94.
12 *Report of Thirty Cases of Meningococcic Cerebrospinal Meningitis. G. McConnell, M. L. Morris and N. A. Seehorn, Camp Pike, Ark.—p. 105.

1. **Blood Plasma and Kidneys.**—Macallum made investigations on the inorganic composition of normal human plasma, with a view to comparison of the same with the blood plasma in cases of Bright's disease, and, more especially, in cases of puerperal eclampsia. Thus far he has found that the very first change from the normal to the definitely established primary condition in some of the forms of Bright's disease is a loss of the power to maintain the paleo-oceanic ratios. The structures in the kidney involved in maintaining these ratios are the proximal convoluted tubules, which, with the glomeruli, are derived from and therefore represent the original parts of the kidney of the earliest vertebrates and of the protovertebrates. The proximal convoluted tubules are also concerned in reducing the H-ion concentration of the blood, for they secrete acid, not acid salts, into the urine, a function which is also very ancient, a function performed in invertebrates by all the cells of the body situated near the body surface, and still performed intermittently and with a high degree of specialization by the gastric glands of vertebrates. In some invertebrates other tissues have specialized in this matter also, as for example, in the salivary glands of the carnivorous mollusk *Dolium galea*, the concentration of the sulphuric acid of the saliva of which exceeds 4 per cent.

Macallum suggests the possibility that the function of preventing the ever-tending-to increase of the H-ion concentration of the blood plasma is as ancient as the paleo-oceanic function, a view which their common localization in the proximal tubules supports. The author emphasizes the view that behind the functions of the renal organ is a history which links up the human body with the far past with an age of the earth when its oceans contained only what would now be regarded as brackish water and the earliest type of vertebrate life was beginning to appear as a marine form. From the facts advanced it will be gathered also that the blood plasma, so far as its inorganic salts are concerned, is but a reproduction of the remotely ancient ocean, and that it is an heirloom from the life in "that immortal sea which brought us thither," for the sea is the original home of all life on the globe and gave our blood, and, accordingly, the tissues of our bodies, a character that long ages have not effaced and will not efface.

2. **Typhoid Vaccine in Typhoid Spine.**—Allan and Squires suggest that from the clinical history of typhoid spine it seems probable that typhoid vaccine given early, would stop the development of this local infectious spondylitis.

6. **Status Lymphaticus.**—In Bellevue Hospital, in the past twelve years, 457 cases of status lymphaticus were encountered among 5,652 necropsies (8 per cent.). In the first 4,000 necropsies there were 249 cases. These have been analyzed, statistically and otherwise, and form the basis of Symmers' paper. The proportion of males to females was about 6 to 1. One hundred and sixty occurred between the ages of 21 and 50. Of the 249 cases, there were 118 instances of status lymphaticus, 89 cases of recessive status lymphaticus and forty-two cases in which the lymphoid tissues were in places hyperplastic, in other places atrophic, in other words, borderline examples, which, however, were tending in the direction of regression. Of the 118 cases of well developed status lymphaticus the thymus gland was hyperplastic in every instance. In the 89 cases of recessive status lymphaticus the thymus was weighable in 19 cases only. In the remaining 70 cases the thymus was practically invisible to the naked eye and its position was occupied by a pad of fat or by fat and scattered glandular remnants, the whole corresponding in a general way, to the normal outlines of the gland. In the 118 cases of well developed status lymphaticus the faucial tonsils were hyperplastic sixty-one times (51 per cent.), the lingual tonsils fifty-eight times (49 per cent.) and the pharyngeal tonsils forty-five times (37 per cent.). Peyer's patches and the solitary follicles were each hyperplastic in 105 cases (88 per cent.), sometimes in combination, at other times independently. The spleen was described as small or normal in size in 68 cases (70 per cent.). In 26 cases the spleen was enlarged, but in all of them contributing factors were found to account for the enlargement, such as cirrhosis of the liver, sepsis, enteric fever, etc.

The splenic lymphoid follicles were hyperplastic in 105 cases (88 per cent.). The mesenteric lymph nodes were enlarged in 7 cases only, the axillary nodes eleven times, the inguinal nodes twelve times, the cervical nodes fifteen times and the peribronchial nodes five times. In 89 cases of recessive status lymphaticus the faucial tonsils were enlarged twenty-five times (28 per cent.), the lingual tonsils thirty-two times (36 per cent.), the pharyngeal tonsils nineteen times (21 per cent.). Peyer's patches were enlarged eleven times (12 per cent.) and the solitary follicles nineteen times (21 per cent.). The spleen was described as normal or small in 52 (71 per cent.); enlarged in 21 cases, in 17 of which enlargement was due to some accompanying lesion, such as chronic valvulvar disease, cirrhosis of the liver, etc. The splenic follicles were hyperplastic in 37 cases (41 per cent.). Of the 249 cases, the heart was small or normal in size in 127 (51 per cent.). In 46 cases the heart was enlarged, due, in every instance, to inherent valvular disease or to chronic interstitial nephritis, emphysema and similar causes. The aorta was hypoplastic in 101 cases (40.5 per cent.). In 78 cases (31 per cent.) the elasticity of the aorta was increased and in 66 cases (26.5 per cent.) the vessel was described as unusually thin.

There were thirty-seven instances (about 15 per cent.) in which anatomic changes due to syphilis were detected in various parts. The aorta was the seat of syphilitic lesions

in fifteen instances (40 per cent.). In 4 cases the aorta from commencement of bifurcation was the seat of syphilitic aortitis, in 9 cases the changes were advanced but were limited to the arch, in 1 case there was syphilitic aortitis of the arch and thoracic aorta and in 1 case a small aneurysm of the sinus of Valsalva was imposed on a limited syphilitic aortitis of the ascending aorta. Acute gelatinous aortitis: In the 249 cases of status lymphaticus there were 15 cases of the acute gelatinous aortitis described by the French.

Sudden death due to spontaneous rupture of a hypoplastic cerebral artery occurred seven times (three times in men and four times in women), all of them under 30 years of age, none of them presenting syphilitic or precocious arteriosclerotic changes in the vessels of the brain or elsewhere. The clinical symptoms were those of cerebral hemorrhage and death occurred rapidly. There were 88 cases of endocarditis (35.3 per cent.), of which number 51, or 57.8 per cent., were acute. It seems scarcely possible to evade the conclusion that status lymphaticus is a distinct predisposing factor in those infective processes which exert a selective action on the heart valves and in which, in many cases, the provocative micro-organism enters the body through the tonsils.

12. **Cases of Meningococcic Cerebrospinal Meningitis.**—In order of frequency the subjective symptoms in these cases were as follows: (1) profound frontal headache; (2) stupor or coma; (3) rigidity of the neck; (4) vomiting; (5) Kernig's sign; (6) increased knee jerks; (7) hyperesthesia; (8) slow pulse; (9) petechiae; (10) slight increase in temperature. Strabismus was not present as an early symptom. The headache was very severe in character, being much more marked than in typhoid, and nearly always was frontal. In regard to the mental condition, there were all variations from an almost abnormal acuteness to complete coma. Rigidity of the neck was, as a rule, well marked and accompanied by more or less retraction. Vomiting occurred in about two thirds of the cases and was of the projectile or cerebral type, coming without warning and without previous nausea. In a few of the cases it was the initial symptom.

Kernig's sign was positive in nearly every case, either slight or well marked, according to the general condition of the patient. The knee jerks were exaggerated in most of the cases, as were the plantar reflexes. Babinski's sign was absent in practically every case. Hyperesthesia was present in many intances to a high degree and at times the skin showed marked irritability, as evidenced by positive "tâche cérébrale." The pulse in nearly every case was slow, commonly between 60 and 70, and not unusually it was in the fifties. Petechiae were present in but a small percentage of the cases, being marked in but three. Generally the distribution was diffuse, with variations in size and shape and not disappearing on pressure. The temperature has not been high, particularly early in the disease. Herpes appeared in practically all of the cases and was abundant, usually most extensive on the lips at the mucocutaneous junction. The ears, nose and forehead were involved also.

All of the patients as soon the lumbar puncture was done, and either a cloudy fluid discovered or a positive globulin obtained, were given, as a rule, 40 c.c. of serum. According to the authors' experience it would appear unnecessary to give the serum more frequently than at twenty-four-hour intervals, excepting in those fulminating forms when death seems imminent. One patient received four injections within thirty-six hours and showed improvement after each treatment. Many of the patients will need no further serum after the fourth dose, yet it may be well to make a puncture at the end of forty-eight or seventy-two hours later to determine the pressure, the quality and quantity of the fluid and the globulin reaction. If the patient does not show improvement it may be necessary to continue the lumbar punctures until recovery or death ensues. In one case, which finally proved fatal, twenty-three lumbar punctures were made. The following signs of improvement were considered of value in the order given, and on them was based the prognosis of the case: (1) improvement in the consciousness of the patient; (2) fall in temperature to nearly normal; (3) diminution in intensity of headache; (4) no decrease or marked increase in the pulse rate; (5) no increase in the rigidity of the neck; (6) decrease in the globulin.

### American Journal of Orthopedic Surgery, Boston

July, 1918, **16,** No. 7

13 Orthopedic Surgery and War. J. L. Porter, Chicago.—p. 413.
14 Rôle of Orthopedic Surgery in Modern Warfare. C. L. Starr, Toronto, Canada.—p. 415.
15 Special Training Battalion of 26th Division, A. E. F. Z. B. Adams, Boston.—p. 427.
16 *Inefficiency Due to Back Strain and Faulty Posture in Unseasoned Troops. D. P. Willard, Philadelphia.—p. 429.
17 Curative Workshops in British Military Orthopedic Hospitals. R. W. Billington, Nashville, Tenn.—p. 431.
18 Re-Education in Functional Disabilities of Active War Service. W. W. Plummer, Buffalo.—p. 433.
19 Some Aspects of Massage Problem. M. Sanderson, Boston.—p. 436.
20 Ward Occupational Therapy for Military Hospitals. H. R. Hayes. —p. 438.
21 Mechanotherapy: Functional Re-Education. E. A. Bott, Toronto, Canada.—p. 441.
22 Problem of Chronic Disabilities of Soldier. F. J. Fassett, Seattle. p. 446.
23 Etiology of Flattening of Upper Femoral Epiphysis; Study of Seventy-Five Personally Observed Cases. A. T. Legg, Boston.—p. 448.
24 Tendon Operations About Ankle for Deformity After Infantile Paralysis. S. Kleinberg and I. Zadek, New York.—p. 452.
25 Orthopedic Work in British General Hospital in France. W. J. Taylor.—p. 464.

16. **Back Strain and Faulty Posture in Unseasoned Troops.**—In contrast with the number of weak and painful backs among the comparatively untrained men of the American forces, the examination of the veteran troops of the British Expeditionary Force is most interesting. Willard, acting as surgeon in one of the large orthopedic bases of Great Britain for seven months, came in touch with 7,000 soldiers who were sent there for orthopedic treatment. Of all these cases there were only four of back trouble. Three of these were unquestionably due to toxic arthritis of the spine or sacro-iliac joints. The fourth case was due to faulty posture. The surgeons of the Royal Army Medical Corps who had served with the British Expeditionary Forces were unanimous in stating that inefficiency from back strain among well trained and well seasoned troops was very uncommon.

### American Journal of Public Health, Boston

July, 1918, **8,** No. 7

26 Safe Limit of Carbon Dioxid in Working Atmosphere. G. O. Higley, Delaware, Ohio.—p. 477.
27 Maternity and Infant Welfare Program for United States. J. H. Larson, New York.—p. 482.
28 Sanitary Moisteners for Postoffice Lobbies. W. E. Forsyth, Ann Arbor, Mich.—p. 487.
29 Study of Pellagra in Mortality Experience of Metropolitan Life Insurance Company, 1911-1916. L. I. Dublin, New York.—p. 488.
30 Bactericidal Efficiency of Soap Solutions in Power Laundry. H. G. Elledge and W. E. McBride.—p. 494.
31 Effect of Plankton Animals on Bacterial Death Rates. W. C. Purdy, Lonoke, Ark., and C. T. Butterfield, Washington, D. C. —p. 499.
32 Filing System for Public Health Literature. R. R. Harkness, York, Maine, and C. E. Turner, Boston.—p. 522.

### Archives of Diagnosis, New York

July, 1918, **11,** No. 1

33 Vestibular Nerve Function. J. Byrne, New York.—p. 1.
34 Polyneuritis and Hyperesthesia in Poliomyelitis, and Differentiation of Polyneuritic Form of that Disease from Postdiphtheritic Paralysis. J. C. Regan, New York.—p. 11.
35 Ocular Complications in Renal Diseases; Their Diagnostic and Prognostic Value. A. Brav, Philadelphia.—p. 29.
36 Diagnostic Data of Commoner Eruptive Diseases. W. L. Somerset, New York.—p. 34.
37 Rachiocentesis and Spinal Fluid. J. H. Barach, Pittsburgh.—p. 48.
38 Diagnosis of Syphilis of Nervous System. J. H. Lloyd, Philadelphia.—p. 56.

### Boston Medical and Surgical Journal

July 25, 1918, **179,** No. 4

39 *Present Needs of Tuberculosis Campaign in Massachusetts. J. B. Hawes, 2nd, Boston.—p. 123.
40 Epidemiology of Typhoid in New England City. D. M. Lewis, New Haven, Conn.—p. 127.

41 *Clinical Method of Collecting Expired Air for Determination of Alveolar Carbon Dioxid Tension. P. Roth, Battle Creek, Mich. —p. 130.

39. **Present Needs of Tuberculosis Campaign.**—The three great needs of the tuberculosis campaign, in Massachusetts, according to Hawes are: (1) Intimate knowledge of the amount of tuberculosis; (2) equally intimate knowledge of machinery and equipment against it; (3) cooperation of all forces, public and private, municipal and state. Nearly 5,000 persons in Massachusetts die of pulmonary tuberculosis each year, which means that there are fully 10,000 patients in the active stages of the disease needing adequate care and treatment. The duty of a local board of health or private physician is not ended when a patient is admitted to a state sanatorium or to a local tuberculosis hospital. The care and supervision of discharged sanatorium patients is one of the most important lines along which progress can be made. Hawes emphasizes that it is the duty of every one of us to help to develop public opinion to the point when the dangerous and incorrigible consumptive can be accorded the treatment which he deserves. We must not, however, allow public opinion to reach the point where every person who is unfortunate enough to contract tuberculosis is looked on as a leper and ostracized from society; finally, Hawes would urge that we remember at all times, and particularly those who are doing purely administrative work, that we are dealing with human beings who happen to have pulmonary tuberculosis, and not merely with "cases."

41. See The Journal, July 31, 1915, p. 413.

### Bulletin of Medical and Chirurgical Faculty of Maryland

March, 1918, **10**, No. 3

42 Practitioner and Deputy State Health Officer. E. A. Jones.—p. 38.

### Iowa State Medical Society Journal, Des Moines

July, 1918, **8**, No. 7

43 Symposium on Pediatrics. L. H. Branson, Iowa City.—p. 233.
44 Physician in the Army. L. Schooler, Des Moines.—p. 235.
45 Etiology and Serum Treatment of Epidemic Poliomyelitis. J. W. Nuzum, Chicago.—p. 237.
46 Radium in Treatment of Carcinoma of Uterus. L. L. Myers, Iowa City.—p. 246.

### Journal of Cutaneous Diseases, Chicago

July, 1918, **36**, No. 7

47 So-Called Porokeratosis (Mibelli), with Special Reference to Its Histopathology. S. I. Matsumoto, Kyoto, Japan.—p. 379.
48 Annular Macular Syphilis: Case Occurring as Early Secondary Manifestation. J. J. Rothwell, New York.—p. 395.

### Kansas Medical Society Journal, Topeka

July, 1918, **18**, No. 7

49 War Experiences in German Base Hospital. H. M. Richter, Chicago.—p. 159.
50 War Experiences in British Base Hospital in Northern France. J. M. Neff, Chicago.—p. 160.
51 Needs of Medical Corps. J. N. Jackson, Kansas City, Mo.—p. 162.
52 Training of Civilian Physician for Army Service. W. N. Bispham, Fort Riley.—p. 167.
53 Organization and Fraternity. J. W. Helton, Hillsdale.—p. 170.
54 War's Aftermath—Legitimate Surgery. F. A. Harper, Pittsburgh. —p. 173.

### Laryngoscope, St. Louis

July, 1918, **28**, No. 7

55 Otitic Meningitis. E. B. Dench, New York.—p. 501.
56 *Ear Protectors. C. W. Richardson, Washington, D. C.—p. 514.
57 Bacteriologic and Clinical Aspects of Infection of Accessory Sinuses of Nose. J. W. Babcock, New York.—p. 527.
58 Case of Chronic Middle Ear Suppuration, Treated by Carrel-Dakin Method, Following Radical Operation. P. D. Kerrison, New York.—p. 537.
59 *Consideration of Asthma from Wider Aspect. H. L. Pollock, Chicago.—p. 543.
60 *Trichloracetic Acid in Vincent's Angina. T. J. Gallaher, Denver. —p. 551.

56. **Ear Protectors.**—The Section of Otolaryngology Medical Department, U. S. Army, of which Richardson is chairman, made a thorough and careful investigation of various devices that have been invented for the purpose of lessening the severity of the concussion impact. These devices have been tested on the living animal; and also rather imperfectly on the human subject. There are three important features in the device: first, applicability; second, safety; third, cheapness. All types of hard and metallic forms of protectors are dangerous, because in cases of gunshot wounds, shrapnel wounds about the auricle or canal, they are likely to become secondary foreign bodies. Therefore, the examiners feel very much inclined to eliminate mechanical devices, such as the Wilson-Michaelson and the Mallock-Armstrong. Some of the cheapest, while fairly good protectors, should be ruled out, because they cut off the conduction of air sounds too greatly. The examiners are convinced that they have found one actual protector in what is known as the British Tommy. This device is simple, easy to introduce, and causes no undue pressure, and is easy to remove. While it cuts down the hearing, it does not cut down sufficiently to impair the voice beyond military needs. It prevents impact of concussion on the membrana tympani, the conducting apparatus; it is safe; there is no possibility of forcing it in against the membrana tympani; it is not likely to be any more conducive to secondary foreign bodies than anything that could be worn in the war; and it is comparatively cheap. In all tests it has proved itself the best protector.

The next most satisfactory is the Mallock-Armstrong. The only objection to the Mallock-Armstrong is the fact that it is made out of hard rubber, and is apt to become secondary point of foreign body injuries. In other respects it is nearly as good as the Tommy. It is not as easy to introduce as the former device. The Baum device is very simple; very easily introduced into the ear; not so easily removed. It can be worn for longer or shorter period without causing any inconvenience to the patient. It is light in weight, and there are practically no dangers attending on its wearing as regards secondary foreign bodies. It is not nearly as good as the other two mentioned. It does not present the fine degree of prevention as do the others to concussion impacts; but it is an American invention, and can be bought at a very reasonable price.

The Wilson-Michaelson device is planned somewhat on the type of the Mallock-Armstrong. It has a movable valve, which has been demonstrated under experimentation not to move as freely as it should with the detonations with which the committee experimented. Under more forceful concussion, such as takes place in actual warfare, it might respond more favorably. It has the advantage of being a perfect conductor for the voice. It has the disadvantage of being made of hard rubber, and therefore possesses, the danger of secondary foreign body injury. It is from experimentation a little difficult to wear, and for longer wear it would be inconvenient. Cotton, saturated with glycerin or petrolatum is the cheapest of all; most available, easy to obtain, constantly at hand. It is practically within the reach of every soldier. Soldiers are very much inclined to use cotton in the dry state. It is only in the wet state that it is of any value to prevent shock concussion. This wetting should be done preferably with glycerin or with pertrolatum. Either one impairs the conduction of sonorous sound waves. Therefore, while it is the cheapest, the most easily available, one that is most likely to be used, it has the disadvantage of deafening the wearer more than any other.

59. **Cause of Asthma.**—Pollock believes that the underlying causative factor of asthma is undoubtedly a disharmony in the ductless gland system. The exciting factor varies: dust, pollens, excreta from animals, split proteins, poisoning, etc., but unless there exists a disharmony in the ductless glands, asthma cannot result.

60. **Trichloracetic Acid Specific in Vincent's Angina.**—Trichloracetic acid is termed Vincent's angina by Gallaher. It should be applied pure, as follows: A small applicator, such as used by nose, throat and ear men, is wound with cotton and dipped in the pure liquid acid. The excess is removed by touching it against an ordinary blotter, and the acid is carefully applied to the entire area affected. In case of the tonsils, the acid should be carried on a thin applicator to the depth of each crypt involved, in addition to the surface application. After the parts are turned white it should be neutralized in one or two minutes by the application of a

saturated solution of sodium bicarbonate. The application of the acid and its neutralization may be repeated in two or three days if necessary. The results will be dependent on the thoroughness of the application. Gallaher has rarely found it necessary to make over two applications. An excess of acid must not be used, and none must be permitted to fall into the larynx.

### Medical Record, New York

July 27, 1918, **94**, No. 4

61 Medical Women, Yesterday and Today. S. J. McNutt, New York. p. 135.
62 Protein Treatment of Arthritis. S. P. Beebe, New York.—p. 139.
63 Hay Fever Pollen Extracts and Their Standardization. W. Scheppegrell, New Orleans.—p. 141.
64 Hereditary Syphilis. W. S. Reynolds, New York.—p. 142.
65 Relation of Proteins in Food to Cause of Disease. R. C. Brown, Milwaukee, Wis.—p. 145.
66 Case of Circumflex Nerve Paralysis Following Carbuncle. L. F. Herz, New York.—p. 149.

### Neurological Bulletin, New York

June, 1918, **1**, No. 6

67 *Case of Juvenile Paralysis Agitans; Primary Atrophy of Pallidal System of Corpus Striatum. J. R. Hunt, New York.—p. 237.
68 *Case of Wilson's Disease—Progressive Lenticular Degeneration. F. Tilney and G. M. McKenzie, New York.—p. 243.
69 Case of Food Poisoning of Type Known as Botulism. M. Grossman, New York.—p. 260.
70 Supra-Optic Canal in Its Relation to Interpretation of Choked Disk. F. Tilney, New York.—p. 265.

67. **Juvenile Paralysis Agitans.**—Hunt's patient is 39 years of age. Except for the nervous manifestation, she enjoys very good health. Her family history is negative, as is also her personal history, blood and Wassermann. Her illness began twenty years ago. The first symptom was a cramp, or a sensation of cramp, in the right foot. This cramp was not constant; it only appeared when she was tired or toward the end of the day when the muscles felt stiff and rigid. In the morning when she awoke from sleep the cramp had disappeared. This symptom continued for some time and gradually increased in severity so that eventually the evening cramp became a permanent stiffness in the foot and leg. For several years, or until she was about 23 years old, the disability was limited to stiffness and weakness of the right foot and leg. At this time the right hand began to tremble. The tremor of the hand came on very gradually and was not constant. It appeared at certain times only and then without apparent reason would disappear. Little by little, however, it became a fixture so that in time there was present almost constantly a marked trembling which became more and more marked as the disease progressed. When she was about 30 years of age the first evidence of trouble appeared on the left side. First there was stiffness on moving the leg, and this was followed by a tremor of the hand and arm. The progress, however, was not much more rapid, probably because the disease was well established, and the degenerative tendency well under way. It is interesting to note that for three years the distribution of the rigidity and tremor was of the hemiplegic type, a not uncommon observation in the juvenile as well as the senile and presenile forms of the disease. The patient has had no special trouble in masticating or swallowing food. The speech, except for slight tremulousness under excitement, is normal. She has had no pains and no paresthesias. With the exception of the motor disability, namely, weakness, rigidity and tremor, she is quite well and enjoys excellent health. Her mind is perfectly clear, there is no loss of memory, and she is quite cheerful in spite of the chronic and serious nature of her malady.

68. **Progressive Lenticular Degeneration.**—The past and family history of this patient, a boy, 15 years old, were negative. He developed, without discoverable cause, severe nervous symptoms which grew progressively worse until his death, seventeen months after the onset. The chief symptoms were a tremor, increased by voluntary movements, hypertonicity of the musculature generally, loss of strength, dysarthria, and toward the end, dysphagia, impairment of bladder and sphincteric rectal control and vasomotor irritability. Physical signs of sensory disturbance were not present. The reflexes were normal. Clearly, this was a case of a motor disturbance with an intact pyramidal system. The patient's condition grew steadily worse and a terminating bronchopneumonia was the final event. The chief lesion at necropsy was an advanced cirrhosis of the liver with slight, though definite changes, in the lenticular nucleus of each side. Syphilis was ruled out by the negative history, negative Wassermann, absence of spirochetes in liver, and absence of any other positive evidence.

### New York Medical Journal

July 27, 1918, **108**, No. 4

71 Modern Obstetric Technic. G. L. Brodhead, New York.—p. 137.
72 Epileptic Attack in Dynamic Pathology. S. E. Jelliffe, New York.—p. 139.
73 Clinical Value of Pupillary Changes. A. Brav, Philadelphia.—p. 143.
74 Ileocecal Insufficiency. M. A. Ramirez and J. P. Hoguet, New York.—p. 146.
75 Surgical Diagnosis. W. F. Fowler, Rochester.—p. 148.
76 Diagnostic Hints in Gastro-Intestinal Diseases. R. Finkelstein, Brooklyn.—p. 150.
77 Some Surgical Problems and Principles. M. Behrend, Philadelphia.—p. 153.
78 *Food Value of Meat. E. H. Nies, New York.—p. 156.
79 Diabetes among Troops. C. G. Cumston, Geneva, Switzerland.—p. 157.
80 Psychology of War. J. M. Beck, New York.—p. 159.
81 Trench Fever. A. Lambert, New York.—p. 159.

78. **Food Value of Meat.**—Nies, who is associate editor of the *Hotel Gazette*, says there are a thousand and one dishes of which each one is in itself a well balanced meal, and in addition is appetizing and nourishing. They can, even at the present high costs, be prepared for a reasonable price. They are made by a combination of a small portion of meat with a larger quantity of grain, cereal, or other farinaceous substances, or vegetables. They are flavored from their essential ingredients so that their preparation requires no high order of culinary skill. With a judicious use of the ordinary fireless cooker they can be prepared in the morning, put in the cooker, and taken out ready to serve when the family returns in the evening; thus releasing poor women from the bondage of the cook stove, and, in addition, providing the family with better food than could be prepared by the old hurryup way, which is so wasteful of material, and consumes so much time. These dishes are prepared so that all the substance of each ingredient is conserved for consumption. The shrinkage instead of evaporating into the air is absorbed by the parts of the combination and saved to the consumer. The pleasure which is derived from eating is established first by sight, second by taste and smell, and lastly by the feeling of satisfaction after eating which brings with it relaxation of mind and body. If food can be so prepared that it brings about all these things, and that with the homely means at the command of every housewife, much can be saved by thus abolishing the necessity of dining at restaurants and spending money, which economized, purchases many better and perhaps more needed things. Stews largely composed of potatoes and various vegetables with only enough meat used to flavor them are better than meat stews. Potatoes cooked à la Boulangère with bacon, and sliced onions constitute a meal in themselves. A small part of meat or fish will give relish or flavor to the satisfying and nourishing cereal. The farinaceous or vegetable dinner will save money and health.

### New York State Journal of Medicine

July, 1918, **18**, No. 7

82 Newer Methods in Diagnosis of Thyroid Disorders; Pathologic and Clinical. E. Goetsch, Baltimore.—p. 259.
83 Medical Treatment of Exophthalmic Goiter. H. C. Gordinier, Troy.—p. 267.
84 Surgical Treatment of Goiter. C. W. Webb, Clifton Springs.—p. 272.
85 Dry Milk in Infant Feeding. R. H. Dennett, New York.—p. 278.
86 Some Problems in Visual Economics as Applied to New York State Workmen's Compensation Law. A. C. Snell, Rochester.—p. 284.

### Public Health Journal, Toronto

July, 1918, **9**, No. 7

87 Problems of Rural Mother in Feeding of her Children. A. Brown, Toronto.—p. 297.
88 Education of Medical Student in his Relation to Child Welfare. R. A. Bolt.—p. 302.

89 Result of Three Years Work in Department of Child Hygiene, Toronto. G. Smith, Toronto.—p. 310.
90 Baby's Father. H. MacMurchy, Hamilton, Ont.—p. 315.
91 National Conference of Social Work, Kansas City, 1918. A. H. Burnett.—p. 324.

### Southern Medical Journal, Birmingham, Ala.

July, 1918, **11**, No. 7

92 *Oral Sepsis and Digestive Apparatus. L. F. Barker, Baltimore. —p. 481.
—p. 484.
93 *Oral Sepsis and Anemias. M. L. Graves, Galveston, Texas.
94 Diagnosis and Treatment of Oral Infections. T. P. Hinman, Atlanta, Ga.—p. 487.
95 *Oral Sepsis and Arthritis. J. H. Gibbes, Columbia, S. C.—p. 489.
96 *Relation of Chronic Infection to Thyroid Deficiency. H. G. Beck, Baltimore.—p. 492.
97 Sociologic Factor in Public Health Movements. J. P. Faulkner, Atlanta, Ga.—p. 496.
98 *Popularizing Public Health. C. E. Terry and F. Schneider, Jr., New York.—p. 498.
99 *Case of Congenital Pyloric Stenosis. W. D. Haggard, Nashville, Tenn.—p. 506.
100 *Tetanus Following Laparotomy for Ectopic Pregnancy. Treatment by Subarachnoid Injections of Magnesium Sulphate and Antitetanic Serum—Recovery. D. B. Casler, Baltimore.—p. 512.
101 Thoracic Empyema. M. D. Delaney, Alexandria, Va.—p. 518.
102 Postoperative Residual Urine. R. M. Harbin, Rome, Ga.—p. 519.
103 Case of Fracture of Skull. G. S. Wright, Cowan, Tenn.—p. 520.
104 Surgery as Therapeutic Agency in Acute and Recurrent Iritis. M. M. Cullom, Nashville, Tenn.—p. 522.
105 Objective Ear Noises; Report of Case. A. I. Weil, New Orleans. —p. 526.
106 Results of Tonsil Surgery as Revealed by Examination of Nearly One Thousand Five Hundred Schoolchildren Who Have Been Operated On. E. L. Roberts, Nashville, Tenn.—p. 529.

92. **Oral Sepsis and Digestive Apparatus.**—Barker calls attention to the fact that serious arthritis, osteitis, osteomyelitis, periostitis, myositis, embolic pneumonia, pleuritis, nephritis, ureteritis, myocarditis, endocarditis, pericarditis, lymphadenitis, neuritis, neuralgia, iritis, anemia, septicemia, and pyemia may, in certain cases, have their origin in oral sepsis and there is a growing tendency to look on the same etiologic factor as contributory, in many instances, to chronic degenerative diseases like arteriosclerosis and arterial hypertension. In the origin of disease in the digestive apparatus the forms of oral sepsis principally concerned consist of two groups: (1) alveolar infections secondary to diseases of the dental pulp; and (2) gingivitis, pyorrhea alveolaris, and infections about impacted teeth and unerupted teeth. The first group includes: (*a*) acute periodontitis (apical, interradial or lateral) in which the tooth becomes tender, especially at night, and feels longer and looser than it should so that mastication becomes painful, often resulting in an acute alveolar abscess (popularly known as a gum boil), in an alveolar parulis (or flat swelling under the periosteum), or in a chronic alveolar abscess with a sinus to the gum or face; and (*b*) proliferative periodontitis, that leads to granuloma (apical, interradial or lateral), usually starting as a result of the devitalization of a tooth and imperfect treatment of the root canal, and causing no symptoms referable to the tooth or gums recognizable by the patient.

The condition is easily recognizable in roentgenograms made on intra-oral dental films; without such roentgenograms it can scarcely be recognized with certainty. Barker states that any person who has devitalized teeth in his mouth does well to have them roentgenographed at intervals in order that a developing proliferative periodontitis shall not be overlooked. The second group of oral infections includes, as stated, gingivitis, pyorrhea alveolaris, and infections about impacted teeth and unerupted teeth. Much toxic matter may be directely absorbed from such infected areas. Often pus is swallowed over long periods (especially in pyorrhea alveolaris), or local extensions or metastatic infections may occur. Inspection of the mouth, palpation of the gums, and roentgenographic examinations make the diagnosis clear. The commonest varieties of disturbance of the digestive apparatus associated with the forms of oral sepsis mentioned above are (1) gastritis and gastro-enteritis, (2) achylia gastrica, (3) pylorospasm, and (4) a toxic hepatopathy. It seems probable also that some cases of (5) gastric and duodenal ulcer are secondary to oral sepsis. Whether (6) appendicitis and (7) cholecystitis may occasionally, as some think, be due to metastatic infection from a primary oral focus, Barker says, is still in doubt.

93, 95 and 96. Abstracted in THE JOURNAL, Dec. 29, 1917, p. 2207.

98. Abstracted in THE JOURNAL, Dec. 15, 1917, p. 2066.

99 and 100. Abstracted in THE JOURNAL, Dec. 22, 1917, p. 2143.

### Texas State Journal of Medicine, Fort Worth

July, 1918, **14**, No. 3

107 How We Treat Wounds Today. R. W. Knox, Houston.—p. 121.
108 Plea for Prolonged Rest in Bed in Treatment of Pulmonary Tuberculosis. S. E. Thompson, Kerrville.—p. 125.
109 Pregnancy and Tuberculosis. W. O. Wilkes, Waco.—p. 130.
110 Complement Fixation in Tuberculosis. M. D. Bell, Dallas.—p. 134.
111 Tuberculosis and Country Physician. H. L. Wilder, Clarendon. —p. 136.
112 How Tuberculosis Specialist Can Best Help General Practitioner in Antituberculosis Campaign. H. F. Gammons, Carlsbad.—p. 138.

## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Medical Journal, London

July 6, 1918, **2**, No. 3001

1 Nature and Symptoms of Cardiac Infection in Childhood. F. J. Poynton.—p. 1.
2 *Nephrotomy Combined with Cesarean Section in Treatment of Eclampsia with Suppression of Urine. C. White.—p. 4.
3 *Tinel's Sign in Peripheral Nerve Lesions. W. M. Macdonald. —p. 6.
4 Sporadic Case of Polioencephalitis. J. N. Marshall.—p. 8.

2. **Cesarean Section and Nephrotomy for Eclampsia.**—White claims that suppression of urine in some cases of pregnancy toxemia is caused by pressure on the collecting tubules due to increased tension inside the fibrous capsule of the kidney. It can be treated successfully by nephrotomy after symptoms have persisted for many days. As a prophylactic measure nephrotomy may be combined with cesarean section advantageously in suitable cases.

3. **Tinel's Sign in Peripheral Nerve Lesions.**—Electric tests are of great assistance in arriving at a complete conclusion when taken in conjunction with other methods of examination, but Macdonald says, they should not be regarded as final, and it is important that the other methods of diagnosing the interruption of a nerve should have their true value recognized. Of these the most important is what Tinel calls *le signe du fourmillement*, which may be translated as "distal tingling on percussion" (and abbreviated as D. T. P.). This sign depends on the fact that when young axis cylinders are percussed there is a sensation of tingling in the cutaneous area corresponding to the ultimate distribution of the axis cylinders. Thus if the musculospiral nerve is cut across in the arm and the proximal end is percussed no tingling will be felt by the patient. The lower segment of the nerve then degenerates, and a very short portion of the upper segment of the nerve, as well as the muscles, tendons, skin, etc., supplied by that nerve exclusively, become insensitive.

After a time regeneration commences at the lower end of the proximal segment, and new axis cylinders grow down to and beyond the point of section. In from four to six weeks there will be bundles of new axis cylinders at this point, and if they are firmly tapped with the forefinger the patient will experience a sensation of tingling or "pins and needles" in the skin over the dorsum of the first and second metacarpals. When tingling in the hand follows tapping on the arm this indicates not continuity of the neuron between the arm and the hand, but between the arm and the brain. If the new axis cylinders are arrested or twisted back to form a neuroma by a fibrosis or keloid mass at the end of the lower segment, or if they cannot reach the latter owing to extensive destruction, the portion of nerve from which D. T. P. can be elicited is never longer than 2 or 3 cm., and is situated at the site of the lesion. That is what is commonly found in interruption by neuroma or section.

If, however, the new axis cylinders succeed in growing down the trunk, or if the latter has only been contused and

has preserved its anatomic continuity, then with the growth of the cylinders there occurs a downward extension of the D. T. P. Another example of the utility of this sign is afforded by cases in which a nerve lesion has occurred in a limb with multiple wounds. The site of the D. T. P. indicates which wound is responsible for the lesion. In lengthy wounds also it indicates the exact level of the nerve injury. In testing for D. T. P. one or two practical points are to be observed. The first is that percussion must always be begun from the distal end and proceeded with slowly, as an unintelligent patient may have a persistent sensation of tingling once it has been obtained and so give fallacious responses. Second, too much shaking of the limb must be avoided, as in a sensitive patient the shock may set up tingling in an area other than the one percussed. Third, care must be taken not to set up tingling in another nerve. Thus, with a complete ulnar and an incomplete median, the patient may answer for the median when the ulnar is percussed. In the leg also patients are apt to confuse tingling in the sole and on the dorsum of the foot (internal and external popliteals). Another source of confusion is the downward growth of stray fibers while the bulk of the nerve remains interrupted. This error can be rectified by later examinations when the bulk of the D. T. P. is found to be at the site of the lesion, while that obtained lower down is indistinct and irregular. In elderly alcoholic, or debilitated persons nerve regeneration is very imperfect, or may altogether fail. In these cases D. T. P. does not occur, and its complete absence is usually a sign of grave prognostic import, but on the whole it is of more value as a positive than as a negative sign.

### Bulletin of Naval Medical Association of Japan, Tokyo

June, 1918, No. 19

5 *Treatment by Radium-Ray. R. Fukuda.—p. 1.

5. **Treatment by Radium-Ray.**—Fukuda has treated thirty-one cases of cancer, sarcoma, lupus, anal fissure, exophthalmic goiter, tubercular lymphadenitis, nevus and angioma by radium ray in the Tokyo Charity Hospital. The effect on cancer was extremely good if adequate attention was paid to applying sufficient radiation measured by the quantity of radium and the duration of exposure. In cases of cancer of the esophagus, a relatively small quantity was sufficient to relieve patients from pain and contraction caused by the tumor; but not for its permanent cure. The effect on sarcoma was also good. Its effect on anal fissure, without any signs of relapse was noteworthy. The effect on lupus was uncertain, some patients being permanently cured without relapse, and some not being affected at all. The effect on tubercular lymphadenitis was undoubtedly good. It had some good effect on the thyroid of exophthalmic goiter patients. In some cases two or three applications resulted in the rapid reduction of the enlarged thyroid with an improvement of the general signs. The cosmetic effect on angioma and nevus was certain. Its effect on nocturnal incontinence seemed to be certainly good; multiple condyloma acuminata were more beneficially affected than by any other treatment; the scar was softened and the chronic inflammatory infiltration was dispersed by this treatment. Local burns were sometimes caused by this treatment, even through a suitable filter. These burns, however, healed quite easily by themselves and there was no need to pay much attention to them.

### Edinburgh Medical Journal

July, 1918, **21**, No. 1

6 Treatment of Acute Appendicitis. W. Q. Wood.—p. 3.
7 Case of Calculus Anuria Treated by Decapsulation of Kidney and Drainage of Renal Pelvis. N. H. Bronnum.—p. 13.
8 Training of Student of Medicine: Teaching of Medicine. W. Russell, G. L. Gulland.—p. 16.
9 Id.; Teaching Arrangements in Medicine. E. Matthew.—p. 24.

### Lancet, London

July 6, 1918, **2**, No. 4949

10 Maternity and Child Welfare Work. A. Newsholme.—p. 1.
11 Infant Mortality and Education of Mother. H. W. Pooler.—p. 3.
12 Epidemic Encephalitis; Report of Cases. S. A. Wilson.—p. 7.
13 *Operative Treatment of Trigeminal Neuralgia. J. Hutchinson.—p. 12.

13. **Operative Treatment of Trigeminal Neuralgia.**—Since 1898 Hutchinson has operated by one technic in over sixty cases, in all of which the ganglion has been approached by the temporal route. Considering the advanced age of most of the patients (many have been from 50 to 60, and one was 72 years old) and their exhausted condition from the effects of years of agonizing pain; taking also into account their malnutrition from inability to masticate their food, etc., and often their edentulous state from fruitless removal of teeth, the results of the operation have been most satisfactory. Only one case proved fatal. The patient was an old man, the subject of both ataxia and true epileptiform neuralgia. He was so feeble that Hutchinson tried to avoid operation by resorting to alcohol injections—which made him worse—and ultimately the gasserian ganglion was excised. His dura mater was very thin and it gave way in detaching it from the skull. Probably owing to this there was undue pressure on the brain during the operation. He died of sudden cardiac syncope an hour after its completion.

Hutchinson says that experience with peripheral neurectomy and alcohol injections has usually obtained respite from the neuralgia for a varying period of months, but return is practically invariable. The essential feature of his method of operating consists in sparing the ophthalmic trunk of the fifth nerve. After the operation facial paresis or paralysis of uncertain duration has occurred in a few cases, on the side operated on due to detachment of the dura mater from the upper surface of the petrous bone, and hence to blood getting through the small openings leading to the aqueductus fallopii. With due care one should avoid this. A more important complication, met with in three or four of the sixty cases, has been weakness of the opposite arm and leg apparently from retractor pressure on the brain during a long operation. Recovery from this is very slow, and the risk of its occurrence points to the greatest care being taken throughout the operation in the use of the retractor, and frequent relaxation of all pressure by depressing the retractor against the bone or removing it for a time.

### Medical Journal of Australia, Sydney

June 15, 1918, **1**, No. 24

14 Gunshot Wounds of Knee Joint. B. Quick.—p. 487. To be continued.
15 *Intestinal Obstruction from Large Gallstone in Ileum. A. Aspinall.—p. 492.
16 *Restoration of Supination by Verrall's Splint. H. S. Stacy.—p. 493.
17 Case of Splenomegalic Polycythemia. H. J. Ritchie.—p. 493.
18 Case of Harlequin Fetus. W. F. Litchfield.—p. 494.
19 Congenital Radio-Ulnar Synostosis. J. G. Edwards.—p. 494.

15. **Intestinal Obstruction from Gallstone in Ileum.**—Aspinall's patient, a woman 61 years of age, had had persistent vomiting for three days. The character of the vomit had been the same throughout, namely, greenish brown color, of feculent odor. The patient was cold, and collapsed, and was vomiting constantly. The abdomen was slightly distended. There was general tenderness on palpation. No definite rigidity was detected. There was no jaundice. Previous history: She had had repeated attacks of gallstone colic during the last nine years, but during the past twelve months could scarcely eat a meal without vomiting. The diagnosis of intestinal obstruction was made and immediate surgical interference recommended. When the abdomen was opened the small intestine was seen to be distended, and on passing the hand up in the region of the gallbladder no marked adhesions were felt, although the gallbladder felt hard and suggested the presence of gallstones. In the left iliac region Aspinal felt a hard body in the bowel; on bringing this portion of the bowel into the wound it was seen to be somewhat collapsed below. The mass was a large gallstone in the ileum about 120 cm. above the ileocecal valve, and moveable for about 60 cm. Then the bowel contracted on it firmly. The bowel was incised and the stone removed. At the site of the stone a marked ring of contraction was evident; before the abdomen was closed this contraction had passed off. The blocking of the bowel was due to spasm from irritation of the stone rather than from mechanical obstruction.

The calculus weighed 13.8 gm.; its length was 36 mm., its diameter 26 mm. and its circumference 85 mm. The patient survived.

16. **Restoration of Supination by Verrall's Splint.**—A soldier, aged 47, had a gunshot wound of the right forearm, fracturing both the radius and ulna about the middle. A piece of the radius was removed two weeks later. An internal angular splint was applied for three months; then massage was given. The masseur attempted to supinate the forearm, but owing to the pain desisted. The man had been discharged from the Army, with his forearm almost completely pronated and with great pain over the fifth metacarpophalangeal joint. It was impossible to supinate the forearm more than a small extent. Stacy decided to apply Verrall's splint, which consists of a plaster casing enveloping the lower half of the upper arm and the upper half of the forearm, in one piece; in the other, the lower half of the forearm down to the palm (leaving the thumb free), is enveloped. Along the radial and ulnar borders of each casing a piece of metal 2 cm. wide and 8.75 cm. long, 7.5 cm. of which is turned up at right angles, is incorporated, making four in all. The vertical turned up portions project at the edges of the casing, the horizonal portions being serrated, in order to fix them to the plaster bandages better. The limb, before the application of the plaster, is enveloped in felt or cottonwool, care being taken to pad well the lower end of the radius in front and the lower end of the ulna behind. In twenty-four hours the pieces of the metal are partly approximated by rubber tubing, radial to radial, ulnar to ulnar. They may be tightened every few days. When supination is complete, it is left on for three weeks longer. This man's supination is now almost completely restored, the treatment having taken two months. The patient found it painful for the first week. He lost all his pain in the palm, and recovered his hand-grip, which previously was very feeble. He is now rejoining the army, and hopes to go abroad soon. The malposition in this case was partly due to contracture of the soft parts around the site of fracture and partly to the contraction of the capsules of the radio-ulnar joints as a result of long immobilization in that extremely faulty splint, the internal angular.

### Medical Journal of Australia, Sydney

June 22, 1918, **1**, No. 25

20 *Mine Accidents at Broken Hill and Their Treatment at Broken Hill and District Hospital. M. Birks.—p. 507.
21 Gunshot Wounds of Knee Joint. B. Quick.—p. 510.
22 Case of Lactosuria with Acetone and Diacetic Acid. H. C. Carden. —p. 513.

20. **Treatment of Mine Accidents.**—In the treatment of burns, Birks has had good results from the use of No. 7 formula paraffin, applied with a broad fine haired varnish brush. In the treatment of shock great stress is laid on keeping the patient warm, and avoiding, as much as possible, mental and physical discomfort. He has practically given up using stimulants. Alcohol and strychnin are now looked on as dangerous. Morphin is their sheet anchor. It is used to prevent and to treat shock. In severe accidents Birks usually give 0.03 gm. hypodermically. If the shock is not successfully combated, the next step is to give intravenously half a liter of hypertonic saline solution. For this purpose use is made of the following formula: sodium chlorid, 2.00 gm.; potassium chlorid, 0.05 gm.; calcium chlorid, 0.05 gm.; saturated solution of gum arabic, 6.00 gm. and distilled water to 100 c.cm.

### Sei-I-Kwai Medical Journal, Tokyo

June, 1918, **37**, No. 6

23 *Staining Solution for Protozoa and Blood. T. Watabiki.—p. 21.

23. **Staining Solution for Protozoa and Blood.**—Watabiki describes his modification of the method of Romanowsky. The erythrocytes and the granula of the eosinophils take a red color and the nuclei a purplish red, contrasting with the blue of the protoplasm, the bluish red of the neutrophil-granula, and the purplish black of the basic granula. Two solutions are prepared separately, the methylene blue, and the eosin stains. Solution I, the methylene blue, is made as follows: methylene blue, 1.0; absolute alcohol, 10.0; sodium carbonate, 1.0; distilled water, 90.0; dissolve the polychrome methylene blue in the alcohol and the sodium carbonate in the water, and then mix the two. The container should be plugged with cotton and allowed to remain undisturbed in the incubator at 37 C. for two days. Solution II, the eosin preparation, consists of: eosin, water soluble, yellowish, 1.0; distilled water, 200.0. To Solution II the filtered Solution I should be added slowly. A purplish black, finely granular precipitate forms immediately, resulting from a combination of the dyes. This may be called "methylenazureosin." The mixture is allowed to stand for an hour and is then filtered. The residue is carefully collected from the paper by means of a wooden spoon and is dried for twenty-four hours at 37 C. An extremely light, purplish-black powder may then be collected. This is the "methylenazureosin" and should amount to about 0.5 gm. The methylenazureosin is carefully ground to a powder and to 0.5 gm. is gradually added 150 c.c. of methyl alcohol. After filtration, 150 c.c. of neutral glycerin is added. This preparation will keep, ready for use, for a long time if put in a dark cool place.

Smears to be stained should be very thin and air dried at room temperature. Fixation is by an ether-alcohol mixture and should require about ten minutes. For use the stain is diluted to 1:10 with distilled water and the smears should be stained for three to thirty minutes, depending on the material to be stained. Leukocytes, blood platelet and bacteria require three to five minutes; trypanosoma, piroplasma, malarial parasites and spirochetes require longer, five to ten or even thirty minutes. In the case of *Spirochaeta pallida* no rule can be established and the stain should remain as long as is necessary to secure a good result. In such stained preparations the various elements present differential characteristics as follows: (*a*) Purplish red: the nuclei of trypanosoma, secondary nuclei, flagella, the chromatin of the malaria plasmodium and piroplasma, *Spirochaeta pallida*, the spirochete of relapsing fever, the spirochete of icterohemorrhagia of India, and the nuclei of leukocytes, cells and blood plates. (*b*) Blue: body of the trypanosoma, piroplasma, plasmodia, and the protoplasm of leukocytes and other cells. (*c*) Red: the granules of eosinophils and of pseudo-eosinophils. (*d*) Pale blue-red: the granula of neutrophils. (*e*) Black violet: the granula of basophils. Bacteria are stained blue or blue-black, the nuclei of erythroblasts blue-black.

### Archives des Maladies du Cœur, etc., Paris

June, 1918, **11**, No. 6

24 *The Heart in Diphtheria. E. C. Aviragnet, R. Lutembacher and Le Soudier.—p. 241.
25 Aortic Diastolic Thrills. L. Bard.—p. 272.
26 Pure Dextrocardia. A. Clerc and J. Bobrie.—p. 277.

24. **The Heart in Diphtheria.**—Aviragnet and his co-workers expatiate on the great interest of the arrhythmias in the course of diphtheria. They are not only of great variety, but they vary from moment to moment, and it is possible to trace in them the whole gamut of progressing and retrogressing disturbances in conduction of the impulse. Only polygraphic methods, with radioscopy, permit exact study of the phenomena induced by the toxic action on the heart. Anatomic examination alone is often misleading. This explains the conflicting testimony that has been published, some of which is analyzed here. The case is then described of a boy of 14 with diphtheria for eight days before antitoxin was given. Seventeen tracings of the heart action are given, showing toxic heart block and extrasystoles and their gradual retrogression, with a colored plate of the necropsy findings in the bundle of His. The boy succumbed the twenty-fifth day to weakness of the myocardium. The lesions in the myocardium were both interstitial and parenchymatous, but they were less pronounced in the bundle of His than elsewhere. Fatty degeneration of the liver was pronounced but the kidneys and suprarenals showed only slight changes.

### Bulletin de l'Académie de Médecine, Paris

June 4, 1918, **79**, No. 22

27 *Bronchopulmonary Spirochetosis. H. Violle.—p. 429.
28 *Radiotherapy of Superficial Cancer. J. Darier.—p. 431.

29 *Massivs Doses in Serotherapy. A. Jousset.—p. 432.
30 *Congenital Luxation of the Hip Joint. Calot.—p. 434.

27. **Bleeding Bronchitis.**—Violle has recently encountered thirty cases of what Castellani in his original report ten years ago called bronchopulmonary spirochetosis. Violle had the thirty cases grouped in a special ward as the disease seems highly contagious; it was probably imported by the Asiatic troops. The sputa are always red with blood, like raspberry juice, and they contain the special spirochetes, sometimes in pure cultures. The disease is relatively benign; the men were sick for about a month in all, but relapses were frequent. The onset is insidious, and the bloody expectoration suggests tuberculous hemoptysis until the spirochetes are found in the sputum; they were never found in urine, blood or in the nasopharyngeal secretions. The slight bleeding leaves open foci which are liable to become infected with other germs.

28. **Contraindications for Roentgen Treatment of Cancer.**—Darier's extensive experience has apparently confirmed that the superficial cancers amenable to radiotherapy are the face epitheliomas of the elderly, the basal-celled growths. They never involve neighboring glands or induce visceral metastasis. But lobulated epithelioma, such as smoker's cancer, on the tongue or lips, cancer of the external genitals or anus, cancer of cicatrices and lupus—this type is not cured by roentgen or radium treatment. When it is applied there is apparent improvement for two or three weeks, then it is seen that the proliferation is growing more active, whipped up, as it were, by the radiotherapy. The cancer may have been operable at the start but after the radiotherapy it becomes inoperable. Darier reiterates that these spine-celled epitheliomas are exclusively amenable to surgical excision which should be as extensive as possible. Radiotherapy further has no influence on melanic sarcomas or cancers that develop in a nevus, sometimes in the young. It is wasting time to dally with radiotherapy; this form of cancer demands radical excision or electrolysis, which is perhaps preferable here. Radiotherapy applied to the small bunches in the skin of secondary cancer, as with mammary cancer, has only a deceptive influence; the bunches may subside under it, but the prognosis of the malignant disease as a whole is not modified thereby. Hence, he reiterates, microscopic examination of a scrap of the cancer will give the clue for successful treatment, if it proves to be a basal-celled growth, especially in the form of ulcus rodens.

29. **Massive Doses in Serotherapy.**—Jousset has made over 1,500 subcutaneous injections of from 50 to 150 c.c. of antituberculosis serum. The injections were repeated at intervals of several days or several weeks or several months. Nothing suggesting anaphylaxis was observed in any instance, and he declares that the fear of anaphylaxis in serotherapy is absolutely chimerical, and that never, in the ordinary conditions of practice, are we liable to encounter it if we utilize serums *larga manu* without regard to possible consequences.

Anaphylaxis presupposes a preliminary sensitization by a small dose of serum, always smaller than the smallest doses of our current practice. Anaphylaxis presupposes further a new injection, two or three weeks later, this time by the vein. This combination is very exceptional and scarcely ever is realized. Of course the massive doses he uses expose to by-effects, sometimes quite dramatic, but they have nothing to do with anaphylaxis, as is evident from their harmless character and the fact that they occur immediately, at the very first injection, even in young children. Anaphylaxis, on the other hand, requires a prepared soil. The by-effects of serotherapy in man are phenomena of toxic action, varying with the individual susceptibility which it is impossible to foretell. It is wrong and misleading to apply the term anaphylaxis to these phenomena. "Anaphylaxis is redoubtable only in the laboratories," he adds, "In man, fatal shock from serotherapy seems to me a pure legend."

30. **Principles for Treatment of Congenital Dislocation of Hip Joint.**—Calot says that the success of treatment depends on the position given the thigh during the months of immobilization, but that there is no agreement among surgeons as to what is the proper position. Rotation, flexion and abduction are applied differently by different men, and without regard for the special conditions in the individual case. This is the explanation for the failures and the return of the luxation. In his experience with over 2,000 cases, he has learned that certain mathematical principles govern the restoration of clinically normal conditions. The thigh must be placed in an attitude determined by the angle of slant and the angle of torsion of the neck of the femur. The rotation should be equal to the angle of torsion of the neck. The abduction should be equal to the angle of the slant of the neck, which is the complement of the angle formed by the neck with the static axis of the femur. The flexion is done in a circular cone, the axis of which coincides with the prolongation of the transverse line (sound cotyle, cotyle, head and neck of the side affected). The shaft of the femur is the generator of this cone, and the generator angle is the supplement of the neck's angle of slant. Rotation, abduction and flexion should be done in the order named. The angles of slant and of torsion can be determined by roentgenoscopy. The femur is rotated inward until the screen shows that the neck has reached the point of its maximal length. This is the true angle of slant, and he marks and measures it. He notes further the rotation of the knee required to bring the neck into this position of its maximal length. The amount of rotation of the knee is equal to the femur's angle of torsion. If roentgenoscopy is not available, two radiograms, taken 90 degrees of rotation apart, may answer, or even mere clinical examination.

## Paris Médical

May 18, 1918, **8**, No. 20

31 *Scabies. G. Milian.—p. 385.
32 *Gallbladder Colics without Stones. L. Lévi.—p. 388.
33 Chronic and Postoperative Dilatation of the Duodenum. V. Pauchet.—p. 393.
34 *Suprapubic Bladder Fistulas. F. Cathelin.—p. 395.

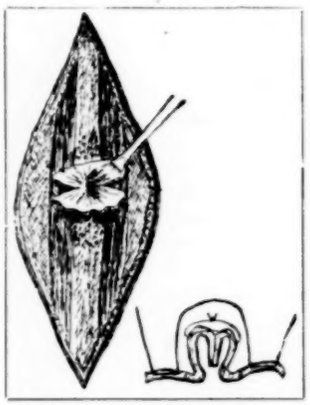
31. **Scabies.**—Milian remarks that 500 cases of scabies per month in two *corps d'armée* have been the average for some time. He has simplified the treatment by using a soluble sulphur salt instead of the insoluble salt generally ordered. The soluble salt can be applied by inunction and there is no need to change the linen. The inunction is repeated the next day and the salve is washed off thoroughly with soap the third day. His formula calls for 250 gm. each of petrolatum and adeps lanae, with which are incorporated 50 gm. potassium polysulphid and 250 gm. water. Then 5 gm. of zinc oxid and 200 gm. of liquid petrolatum are added. The salve has a disagreeable odor at first, but this wears off in half an hour. The scabies symptoms may become aggravated under this treatment for the first three or four days, and unless the salve is thoroughly washed off after the second inunction there is liable to be an eruption. In any event, it is well to follow with a zinc oxid paste made up with equal parts of the zinc oxid, petrolatum and adeps lanae.

32. **Congestions from Thyroid Instability.**—Lévi reports a typical case of "neuro-arthritism" with congestions in different organs revealing thyroid instability. The patient is a woman of 37 and the congestions at times in different organs led to various conflicting diagnoses. The most striking clinical picture was presented when the gallbladder became much enlarged from congestion in the cystic duct closing the outlet of the gallbladder. Paroxysms of pains and tenderness suggested gallstone mischief, but during an appendicectomy exploration of the gallbladder failed to reveal any stones. The provocative influence of a course of treatment at Vichy on these gallbladder colics was evident on more than one occasion. During a month of repose and dieting for the assumed cholelithiasis, there was an extremely severe attack each week. On the other hand, during periods of extreme activity and fatiguing travel, with no diet restrictions, three months might pass without an attack. The special feature of the case, however, was the gradual progressive subsidence of the attacks, along with all the other symptoms, when thyroid treatment was given systematically. This is more conclusive than if the attacks had stopped abruptly, which might have

been ascribed to a coincidence. The approach of the menses induced various phenomena of congestion, and the gallbladder colics developed in connection with these phenomena, or they were preceded by a violent attack of myalgia and neuralgia. The woman's breasts swelled before the menses, and the more they swelled, the more intense the gallbladder attack when such developed.

Under thyroid treatment, 5 mg. cachets, the woman's martyrdom ceased, and she has resumed an active life. The case teaches the advisability of tentative thyroid treatment in every case of thyroid instability, even if the symptoms cannot be definitely classed. This patient's mother was a sufferer from migraine, and one of her children had asthma which was cured by thyroid treatment. The patient herself has had from youth a tendency to headaches, nasal asthma, urticaria and mild rheumatism, and once there was intoxication from belladonna, given in small doses.

34. **Suprapubic Vesical Fistulas.**—Cathelin has been amazed at the rapid cure of hypogastric fistulas treated by inversion of the skin. He applied this technic, March 13, 1917, curing with it in a few days a fistula rebellious to other methods of treatment for five months. In a second case the fistula was of twelve months' standing, and the healing was complete in twelve days. The fistulas were the result of war wounds. The fistula is circumscribed with a bistoury at about 3 or 5 mm. from its center, and this collar of skin surrounding the fistula is loosened up to the mouth of the fistula. The skin beyond is incised along the same meridian and is loosened up in the same way for some distance back. The collar around the fistula is then slit on both sides, perpendicular to the meridian, and each half is turned inside out, toward the lumen of the fistula. The raw sides are thus brought in contact and the folded-over ends are pushed down into the fistula. Three fine silk sutures hold the ends inverted. Other silk threads are passed through beyond, bringing the other ends together above. The skin is sutured together in a straight line over the whole. The method is equally applicable to bladder and ureter fistulas. The various steps are shown in four illustrations. One of the special features is that the bladder wall itself is left unmolested. The pincers used are oculists' pincers, to avoid injury of the skin flap, and the needles are right, intestinal needles, very small. Catgut is absorbed too soon; fine silk is the reliance. A retention catheter is depended on for drainage for twenty-five or thirty days. The technic can be applied equally well to fistulas into any hollow organ. The ultimate outcome in his three bladder cases has been perfect.



**Presse Médicale, Paris**

June 24, 1918, **26,** No. 35

35 *Encircling Bands for Fractures. J. Tanton.—p. 317.
36 *The Glass Pressure Sign. J. Nicolas, M. Favre and A. Saleur.—p. 318.
37 Spontaneous Periscapular Amyotrophies. A. Léri and Perpère.—p. 320.
38. *Talipes Varus. C. Ducroquet.—p. 321.

35. **Steel Bands to Hold Fractured Bone.**—Tanton gives illustrations of Parham's method of correcting fracture by passing one or more thin, narrow steel bands around the bone. There is a buttonhole in the broader tip of each band through which the other end is passed. The noose can thus be drawn tight and firm, and the end bent down to hold it, the osteosynthesis thus realized being solid and permanent.

36. **The Glass Pressure Sign.**—Pathologic changes in the derma may be rendered visible by pressing on the skin with a sheet of glass. This *signe de la vitro-pression* has been accepted as testifying to the tuberculous nature of the changes seen, but the research here reported shows that similar findings are common with syphilis and other diseases involving the skin.

38. **Talipes Varus.**—Ducroquet remarks that the number of cases of talipes varus equinus among the wounded is legion, and he discusses how it can be corrected. When not very pronounced, this can be accomplished by raising the heel very high on the outside and having the heel slope and project far to the outside of the foot. In paralysis of the external popliteal nerve, four elastic bands fastened to the side of the shoe and a garter above act like artificial muscles to keep the foot from dropping. In inveterate cases, very good results can be obtained with mediotarsal and subastragalal arthrodesis. This puts an end to the torsion and rolling over of the foot, while leaving a play of 35 degrees of movement which is ample for walking. The article is illustrated.

**Progrès Médical, Paris**

June 1, 1918, **33,** No. 22

39 *Stones in Urinary Apparatus. Uteau.—p. 189.
40 Heating Cradle. Bonnette.—p. 192.

June 8, 1918, **33,** No. 23

41 *Radioscopy of Normal Stomach. F. Ramond and P. A. Carrié.—p. 197.
42 *Reeducation of Blinded Soldiers. E. Ginestous.—p. 199.
43 Technic for Extraction of Projectile under Screen Control. J. Fiévez and P. Tronquet.—p. 202.

39. **Urinary Concretions.**—Uteau discusses the best means for removing calculi at different points in the urinary apparatus, illustrating typical cases. Catheterization of the ureter has proved successful in a few cases when the calculus was impacted in the ureter, but in one case reported in which the calculus protruded from the mouth of the ureter, even passing the catheter up to the pelvis, failed to dislodge it.

41. **Radioscopy of the Normal Stomach.**—Ramond and Carrié remark that the stomach containing the suspension of bismuth cannot be regarded as a normal stomach. They sought to approximate normal conditions better by mixing 40 gm. of bismuth in a dish of savory hash, eaten as at an otherwise ordinary meal. Eighteen vigorous men taking this meal were examined afterward with the roentgen rays, and the findings in the erect and recumbent positions are reproduced. With any tendency to gastritis, the mucosa is extremely sensitive, and pain is experienced when the gastric juice comes in contact with it. The chyme protects the mucosa against the gastric juice. When the inflamed part of the stomach is the initial portion—which is usually the case with toxic gastritis—then the gastric juice in the fluid contents acts at once on the inflamed region, and the consecutive pain is immediate. When the gastritis is in the middle part of the stomach, the chyme protects the mucosa, and there is no pain until the chyme is passed on out of the stomach which leaves the mucosa exposed to the irritation from the gastric juice in the fluid contents left. When the gastritis is in the region of the pylorus, no pain is experienced until the acid-containing fluid contents are passed along. A tardy pain, after two or three hours or more, indicates therefore an inflammatory process in the region of the pylorus. When the gastritis involves the whole of the stomach, then we have a combination of all three types of pain, the early, the retarded and the tardy pains.

42. **Training the Blinded Soldier.**—Ginestous declares that every minute is precious and not one should be wasted, from the beginning, to train the suddenly blinded. He is like a babe just born into a new world. From the very first, while still in the eye infirmary, his training in writing with a guide frame and in reading the Braille type should begin, without waiting to ascertain whether vision is entirely lost or not. A small broom or brush-making plant is now connected with each *centre d'ophthalmologie*. Even if vision is regained later, these exercises do not harm but fill up the leisure moments, while if total blindness is unavoidable, precious time has been saved. In his own service, Ginestous has been amazed at the rapid progress made by the men. In a few hours they learned to write with the aid of the frame. The Verdon-Richard *guide-mains* seemed to give the best results in this line. All the men could read and even write the Braille fluently by the time they left his service. All the men, besides, had been initiated into manual labor, such as

weaving rugs, making brooms or brushes, resoling shoes, or doing light garden work.

### Revue de Chirurgie, Paris

Nov.-Dec., 1917, **36**, Nos. 11-12. Issued May, 1918

44 *Suture of Nerves. E. Duroux and E. Couvreur.—p. 401.
45 *Surgical Service on Boats. Delanglade.—p. 420.
46 *War Wounds of Vessels in Neck. P. Mocquot.—p. 441.
47 *Complicated Fractures of Femur. G. Houzel.—p. 473.
48 *Projectiles in Mediastinum. R. Le Fort.—p. 489. Conclusion.
49 *The Seriously Wounded. Chalier and Glénard.—p. 552. Cont'n.

**44. Suture of Nerves.**—Duroux and Couvreur reiterate, on the basis of extensive clinical and experimental experience, that rapid recovery of function after suture of a nerve is an illusion. It takes a long time for a sutured nerve to regain its function. Even when the nerve has recuperated, if the muscles have degenerated beyond repair, the outcome will be poor. The median and the ulnar nerves are less likely to regain satisfactory function after suture than the external popliteal and the radial. Two cases are illustrated showing the fine functional results after suture of the radial nerve which had been severed by a bullet. In both cases the total radial paralysis gradually subsided, after the nerve had been sutured, to satisfactory functioning in a year, and to complete recovery of function by the twenty-first and twenty-eighth month. During the first six months the only apparent effect of the suture was the gradual disappearance of vasomotor disturbances, the cyanosis of hands and fingers progressively diminishing. This trophic improvement is due to the suppression of the exuberant connective tissue surrounding the ends of the nerve. The best results were attained when the stumps were cut slanting, the coaptation thus being oblique. The ideal to be aimed at is to unite motor fibers with motor fibers and sensory with sensory. "Motor fibers may grow to sensory fibers and conduct impulse, but what becomes of the impulse when it reaches the anterior root? There cannot be correct reflex action from it."

**45. Surgical Service on Canal Boats.**—Delanglade organized a hospital service on some canal boats plying on the Somme canal close to the firing line. The rough boats were readily adapted to the purpose in three days, and formed a useful supplement to the land hospitals, although hampered by lack of roentgen equipment. The fact among others that eight recovered of thirteen men with penetrating abdominal wounds, testifies to the advantages of these canal boats surgical services.

**46. Wounds of Large Vessels in Neck.**—Mocquot remarks that all the men with wounds of large vessels in the neck reached his service with no mention on their cards that these vessels had been injured. He assumes, consequently, that these injured vessels had not induced symptoms enough at first to attract attention. Short circuiting of the circulation by an arteriovenous aneurysm is a frequent complication. It may develop at once or not until several days or even weeks after the wound. The great danger with an operation in this region is the shutting off of the carotid artery blood from the brain. Hence temporizing is advisable, unless urgent conditions demand immediate intervention. Ligation of a carotid artery is a less serious procedure with an aneurysm than with a recent wound. If an immediate operation is necessary, every effort should be made to avoid the necessity for interrupting the blood supply to the brain, whenever this is possible.

**47. Compound Fractures of the Femur.**—Houzel restricts his remarks to the application of the Gassette apparatus in cases of war wounds of the thigh. He says it has been in use in different hospitals for eighteen months, and has established its usefulness and advantages "veritably approximating perfection."

**48. Projectiles in the Mediastinum.**—Le Fort here concludes his comprehensive study of this subject, based on his own experiences and the literature. He describes in detail each case in his two groups of forty and eleven cases, with deductions as to diagnosis, prognosis, and the preferable technic for extraction of projectiles in different sites.

**49. The Seriously Wounded.**—In this instalment of their extensive work, Chalier and Glénard review their experience with wounds of the genito-urinary apparatus, and the lessons learned therefrom.

### Correspondenz-Blatt für Schweizer Aerzte, Basel

June 15, 1918, **48**, No. 24

50 *Achylia Does Not Predispose to Cancer. A. Hofmann.—p. 785.
51 Accidents and Disease. H. Zangger.—p. 796. Conclusion.

**50. Gastric Achylia and Cancer.**—Hofmann queries whether achylia predisposes to malignant disease, his observation in a Berlin policlinic tending to answer the question in the negative. Among 368 cases of gastric achylia, there were four cases of gastric cancer and two in 200 private patients. In two of these six cases the achylia was of four to fourteen years' standing. In the others it may have been a symptom from the beginning cancer.

### Chirurgia degli Organi di Movimento, Bologna

April, 1918, **2**, No. 2

52 *Treatment of Infected Joint Wounds. D. Taddei.—p. 103.
53 *The Circulation in the Skin. G. Pieri.—p. 115.
54 *Reflex Crippling of Foot. F. Nassetti.—p. 129.
55 *Tendon Transplant for Radial Paralysis. G. Serafini.—p. 167.
56 *Research on Materials Used in Prostheses. A. Landini.—p. 195.

**52. Infected War Wounds of Joints.**—Taddei's experience in a base hospital has confirmed the advantages of subcapsular and subperiosteal resection of the infected joint, sparing muscles, tendons and the innervation of the muscles. Only when ankylosis is planned, should the ligamentum patellae be severed without hesitation. He applies the first dressings under a few whiffs of ether, and shuts off the blood temporarily with an elastic band above. This permits better inspection of the joint, while the febrile reaction to the dressing manipulations is less. He repeats the ether at each dressing, until they cease to cause pain. The leukocytosis induced by the ether aids in the defensive processes; it was his impression that the men given ether several times in this way had a more rapid and favorable course, other things being equal. Another impression was that gauze used in draining seemed to invite fistulas more when it was in strips than when packed in loose. The drainage acts like a foreign body and keeps up the suppuration.

**53. Kinetic Amputations and the Circulation in the Skin.**—Pieri has been studying the superficial circulation as it affects plastic and kinetic surgery. He gives illustrations of the location and branching of the vessels as they enter the skin in limbs and trunk, and outlines the flaps of skin that could be cut at different points so as not to interfere with the local circulation. The base of the flap can thus be located so that the artery, vein and capillary system will be left intact.

**54. Talipes Varus After War Wounds of the Leg.**—Nassetti gives illustrated descriptions of twenty cases of talipes varus that had persisted for several months or over a year after a war wound of the leg. The contusion or distorsion to which the deformity was referred was not apparently serious in any case, and there had been no septic complications even in the projectile cases. Some of the men were in bed for only a few days and some soon resumed their service, but had to return to the infirmary on account of swelling and pain in the foot. Others had had the limb long in plaster. He does not think that hysteria is exclusively the cause of the crippling. There are signs of neuritis in many cases, and other factors combine in this "metapsychic crippling." He applied various physical and mechanical measures in treatment, and obtained good results in the mild cases but little or none in the ones of longer standing, even with overcorrection in plaster. His experience confirms the vital importance of watching over the use of the foot when a man gets up after a wound of the leg, or even slight trauma of the leg. Vicious attitudes of the foot should be detected and combated early, addressing treatment both to possible organic causes, hysteria and simulation, with prolonged observation and systematic treatment, always in the one hospital when possible. The longer crippling persists, the harder to overcome.

**55. Tendon Plastics for Radial Paralysis.**—Serafini describes thirteen different methods for plastic operations on tendons to correct radial paralysis, besides operations on bones in

the region, and correction by external mechanical devices. He gives the details of two typical cases treated by transplanting tendons, with excellent effect. Whatever operative method is applied should be preceded by correcting the drooping of the hand, as this menaces the nutrition of the hand. In his second case this was responsible for swelling and cyanosis of the hand for a time. The literature on the subject of treatment of radial paralysis is reviewed.

56. **Experimental Research on Substances Used in Making Prostheses.**—Landini's investigations included wood, fiber, metal, leather and hides. His report fills sixty-three pages and is profusely illustrated; tables are given also showing the results of numerous tests of the strength, etc., of the substances under different conditions of humidity, dryness, pressure, strain, etc. Landini was awarded the $1,000 prize offered by the National Federation of committees for aid to crippled soldiers. His research and practical work were done in the experimental prostheses department of the Rizzoli Orthopedic Institute. He signs his name Landini "Eng.," not "M.D."

### Policlinico, Rome

June 23, 1918, **25**, No. 25

57 *Lactic Acid as Dressing for Wounds. G. Moruzzi.—p. 581.
58 *Anglo-Saxon Medical Journalism. L. Verney.—p. 584.

June, 1918, **25**, Medical Section No. 6

59 *War Wounds of Peripheral Nerves. S. Ricca.—p. 161. Conclusion.
60 *Tactile Sensations in the Gassed. E. Cavazzani.—p. 178.
61 *Uric Acid and the Endocrine System. T. Silvestri.—p. 184.

57. **Sugar-Lactic Acid Treatment of Septic Wounds.**—Moruzzi describes the scientific reasons which led him to try a solution of 15 gm. of lactic acid and 250 gm. sugar in 1,000 gm. water, in treatment of septic wounds. The results in the twenty cases surpassed all anticipations. Suppurating and putrid wounds by the third or fourth day showed healthy granulations which spread more rapidly and healing proceeded faster than in any healing by primary intention. The cases included two of gas gangrene and eighteen of phlegmons. All had fever, pain and general toxic symptoms. After the surgical clearing out of the lesion it was dressed with this solution, renewed twice a day, the dressing left undisturbed.

58. **Anglo-Saxon Medical Journals.**—Verney describes for Italian readers two British and two American medical journals, of which The Journal is one. He remarks that Italy has not been familiar with Anglo-Saxon medical journals, partly from negligence but mostly from the preponderance of the German medical journals. It is only recently that Italy has realized the important position taken by the Anglo-Saxon in the field of medicine. In general medical journalism, he says, "The Journal A. M. A. takes the lead, not only in the United States but in all countries; no other is so well edited." "The discussions which are given with the addresses aid materially in illuminating the subject from various points." He pays high tribute to the editorials, "the most characteristic feature of Anglo-Saxon medical journals, short, lucid, interesting." The special articles in The Journal are also extolled as "revealing an ample and accurate knowledge of the subject, and rare critical balance. They may be regarded as the most useful feature of The Journal, they certainly are the feature that has most contributed to establish its renown." In commenting on the fight against nostrums, Verney remarks that the so-called American Evil is far from being restricted to America alone. He gives a full account of the Propaganda Department and its work, the Council on Pharmacy and Chemistry, the Educational Numbers of The Journal and of the British journals. He remarks of the latter that they accept certain advertisements of dubious products, "the *Lancet* even publishing advertisements on pages that should be reserved for the reading matter, a practice which in Italy is never seen in the leading medical journals."

The scant space devoted in the British journals to abstracts of current literature Verney ascribes to the British insular tendency to isolation, and chides them for it. "The Journal A. M. A.," he says, "carries on an intense and well organized editorial oversight of numerous journals in all countries, reviewing them promptly and accurately." He adds that besides the twelve Italian journals already indexed regularly in The Journal, two other Archives deserve a place and some of the specialist journals. To make space for more abstracts, he suggests dropping the indexing of the titles as superfluous. "On the whole, however," he exclaims, "would that some Italian medical journal had the courage and the capacity to imitate it." Another feature, he says, which distinguishes the Anglo-Saxon medical journals is the impartiality of the book reviews. They are not written, as in Italy, France and Germany, to please the publishers and flatter the authors, but actually to inform the readers. Verney does not forget to refer to "Tonics and Sedatives," saying that this lighter vein seems to him out of place in a serious scientific journal but that it "responds to the American spirit, untrammeled and free from prejudice. It has the advantage further of attracting attention to the advertising pages, which otherwise might not be glanced at."

59. **Suture of Nerves.**—Ricca discusses the clinical-surgical problem of war wounds of peripheral nerves inducing paralysis, with or without neuralgia. In nearly half of his own thirty-five cases with neuralgia, the pain developed the very day of the wound; in only seven cases was there an interval of a month or more before the onset of the pains. Early development of pain and paralysis indicates that the trouble is within the nerve and not the result of compression, etc. In his thirty-three operative cases he never found one with a zone of atrophy or strangulation of the nerve. The tendency to spontaneous recuperation also disproves the assumption of compression as the main factor. Injury from compression of the nerve must be regarded as a rare eventuality with war wounds of peripheral nerves. The reason why so many military surgeons ascribe such a predominant rôle to compression in these cases is merely because neurolysis, releasing the nerve, is almost inevitably followed by improvement. Ricca, however, insists that this improvement would have occurred spontaneously, without the intervention, in most cases. Study of parallel series with or without neurolysis amply confirms this assumption.

He emphasizes further that suturing the nerve does not ensure its recuperation, but only offers a probability of it. A cure or notable improvement after suture is observed only in less than half the cases of sutured nerves. On the other hand, a spontaneous cure was observed in over half the cases of the complete paralysis type. Outside of the cases with diastasis, a spontaneous cure was realized in about 66 per cent. of the cases. In all cases in which conditions do not indicate unmistakable compression, he advises surgical abstention if the lesion seems to be incomplete. If, on the other hand, the lesion is complete, an explorative operation is called for, and if the anatomic findings indicate that the nerve lesion is absolutely incurable, the nerve should be sutured. Otherwise, surgical intervention should be postponed until it is finally settled that spontaneous recuperation is out of the question.

60. **Modification of Tactile Sensations by War Toxic Gases.**—Cavazzani is professor of physiology, and he reports a case of poisoning from the gases used in warfare which apparently sustains his assumption that the fields of tactile sensation are an essentially psychologic phenomenon, as he describes in detail.

61. **Uric Acid-Destroying Power of Ductless Glands.**—The results of Silvestri's research seem to sustain his theory that the endocrine sympathetic system presides over the metabolism in general as the regulator, the physiologic stimulus indispensable for its normal rhythm, but not the *primum movens* of the metabolism. It merely stimulates or checks the activity of the metabolism in general, including the production and destruction of uric acid.

### Upsala Läkareförenings Förhandlingar

Dec. 27, 1917, **23**, No. 1-2

62 Development of Arsenic by Fungi. G. Wirgin.—p. 1.
63 Interstitial Myositis in Man of 43. G. Holm.—p. 23.
64 Frequency of High Blood Pressure with Accidental Heart Murmurs. E. Kylin.—p. 34.
65 Changes with Age in Rabbit Suprarenal. B. Bager.—p. 48.